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HEMATOLOGY

The Clotting Mechanism and the Bleeding Diseases*

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Introduction—The nature of blood coagulation, the yet unanswered question of what normally maintains blood in the fluid state, and the spontaneous conversion of fluid blood to solid clot, are matters which have provoked the curiosity of physiologists for many years.

It is perhaps because of the provocative nature of the problem itself, perhaps because of the ease with which experiments can be devised and carried out, that this problem has received so much attention. The supposed components of the clotting mechanism can be neatly separated in test-tubes and allowed to interact in endless permutations and combinations. Each experiment suggests another. Always the intangible solution seems just within reach and the investigator is led deeper and deeper into his own, often unjustified, interpretations.

Thus there has grown up a vast amount of literature concerning the various aspects of blood coagulation; elaborate theories have been propounded, which, aided by rival terminologies have resulted in a great deal of confusion, and not a little acrimony.

It will be the purpose of this short discussion to try to disentangle some of the basic facts concerning the clotting of blood; to show where fact ends and speculation begins. It may be well, before discussing the mechanism of clotting, to consider briefly its functional significance.

We know that in the healing of wounds, fibrin formation may serve as a scaffolding for the process of repair. In bacterial inflammation the coagulation of edema fluid and subsequent fibrin formation may be more or less effective in preventing the spread of infection through the adjacent tissues. The obvious and chief use of the clotting mechanism, however, is in the control of haemorrhage.

Coagulation is not the only factor concerned in the control of bleeding, since severe haemorrhage states may exist despite a normal clotting mechanism. At this point we might dwell for a minute on the relative importance of the parts played by the clotting mechanism and the vessels themselves in the control of bleeding. Macfarlane, in 1941, showed quite adequately that after injury there is a short period of bleeding from cut vessels, as measured in the performance of the bleeding time. This is followed by a period of hemostasis lasting for about an hour, and which is due primarily, to the contraction of the damaged vessels. These vessels then dilate, but recurrence of the haemorrhage is prevented by the firm clot that has had time to fill the wound. The control of bleeding, therefore, is essentially the result of two factors, namely vascular contraction and clot formation. One without the other is quite useless. Yet another factor, namely the platelets, may be implicated, but this will be discussed later.

Although the nature of blood clotting had been the subject of isolated and sporadic observation since the time of Malpighi in 1666, it was not until 1892 that Alexander Schmidt set the basis for the modern concept of the coagulation mechanism. It was his idea that a chain of reacting factors culminated in the conversion of fibrinogen into fibrin. This was accomplished by a ferment called thrombin. He recognized, further, that thrombin was not present in the circulating blood, but was derived from an inactive precursor, prothrombin. The prothrombin, he postulated, was activated by zymoplastic substance, or thromboplastin as we know it today. Even at that early stage, thromboplastin was considered to be lipoid in nature.

It remained for Arthus and Pages discovery of the essential part played by ionised Ca in the activation of prothrombin to complete the modern conception of the coagulation mechanism.

This was restated in 1905 by Morawitz, who considered that clotting involved two stages and four essential components, thus:

1. Prothrombin and Ca + Thromboplastin = Thrombin.

2. Fibrinogen + Thrombin = Fibrin.

This is the so-called classical or four-factor theory and has held the stage up to the present time.

On this portion of the clotting mechanism there is general agreement. It is when we attempt to define the factors concerned in these reactions, or the mechanism by which prothrombin is converted to thrombin that we embark on contentious

*This is a series of lectures delivered to the internes at the Children's Hospital, Winnipeg, Man.

ground—and when we come to consider the more unorthodox theories of clotting, or the question of why blood normally remains fluid, we are in the realm of speculation.

Keeping in mind the classical theory, I would like to review briefly the state of our present knowledge concerning the factors concerned.

Fibrin, of course, is the end result of normal blood coagulation. It is composed of fine needle like fibres which entangle the formed elements of the blood. The two chief properties of freshly coagulated fibrin are its adhesiveness and ability to retract; both of these properties being of obvious importance in hemostasis. The contraction of the clot is reduced in those conditions in which there is the thrombocytopenia, the apparent explanation being a purely mechanical one—there being an inadequate number of platelets upon which the fibrin thread can anchor themselves in order to contact properly. Fibrin eventually undergoes dissolution due to activation of a proteolytic enzyme of the plasma.

Fibrinogen may be described as the fraction of plasma protein which is coagulable by thrombin. Like fibrin the miscellar structure is long and thread like. It is generally assumed that fibrinogen is formed by the liver. The chief evidence for this is that experimentally in dogs, a rapid and profound fall in blood fibrinogen occurs following exclusion of the liver from the circulation, or by destruction of liver function by administration of chloroform. In such experiments it is assumed that the fall in fibrinogen is due to the cessation of production by the damaged or excluded liver, the normal rate of utilization being presumably very high. There are certain objections to this concept, the most serious of which is that substances such as choloroform induce intense fibrinolytic activity, so that the disappearance of fibrinogen in these cases may have been due to an increased rate of destruction rather than to depressed production.

It has also been observed that fibrinogen transfused into a patient with congenital absence of fibrinogen, could still be detected after 96 hours. If this represents the rate of utilization, then removal of the source of supply would not have resulted in a detectable drop in the course of a few hours.

Thus, the whole question requires re-examination.

Prothrombin is the inactive precursor of thrombin, and as such is present in the circulating blood. It has the physical and chemical attributes of a globulin, and like fibrinogen is destroyed by proteolytic enzymes.

The evidence that prothrombin also is produced by the liver, is based on prothrombin deficiency arising after chloroform poisoning or partial hepatectomy. Since prothrombin, like fibrinogen is destroyed by proteolytic enzymes, and the experimental procedures described are potent activators of the proteolytic system of the blood, the same objections to these conclusions can be made as were discussed in relation to the site of origin of fibrinogen.

Thrombin a heat labile, albumin like substance is the factor which, though absent from the normal circulating blood, develops during the process of coagulation, and on separation can be shown capable of clotting many times its own weight of fibrinogen.

Vitamin K is essential for prothrombin production. Chemically this vitamin is a naphthaquinone, and is found widely distributed in plants, particularly in green leaves. In man, deficiency of Vitamin K because of faulty diet is difficult to produce, since it can be synthesized by bacteria in the intestine. For its absorption from the intestine bile salts are necessary; so that the chief circumstances under which a Vitamin K deficiency may be found, are obstructive jaundice and occasionally deficient absorption as may occur in sprue.

Its mode of action in the production of prothrombin is at present unknown, though some work suggests that it is an integral part of the thrombin molecule. Its administration in cases of hypoprothrombinemia is effective only if the function of the liver is essentially normal.

Calcium: It is now undisputed that ionized Calcium is required for the conversion of prothrombin to thrombin. The non-diffusible protein bound fraction does not take part in the coagulation process.

Removal of calcium by precipitating it as the oxalate, or suppression of ionization by the addition of citrate will inhibit the normal clotting process indefinitely.

Thromboplastin: It has long been observed that blood will not clot if it is collected uncontaminated by tissue fluid and is kept in a container with a non-wettable surface such as paraffin or silicone. The addition of a small quantity of the watery extract of any tissue will induce rapid clotting.

We can therefore assume that prothrombin is inactive even in the presence of calcium, but that it can be activated by a factor or complex of factors in the tissues.

A major difficulty arises in discussing the properties of thromboplastin; for like other factors participating in the coagulation mechanism, it is probable that thromboplastin has more than one component.

The original zymoplastic substance or cytozyme used by Schmidt was an alcohol extract of tissues

and was thought to contain lecithin as the active factor. Morowitz showed that the aqueous solutions had the same effect—he concluded that the active factor was a protein and called it thrombokinase or simply kinase. Howell resolved these apparently divergent views by showing that both extraction by water or by lipoid solvents yielded active material, and he applied the now popular term thromboplastin to the water extractable fraction. He was able to show that the ether soluble fraction was cephalin, the water soluble fraction a protein. Each of these fractions used separately had thromboplastic activity, which was greatly enhanced when the fractions were combined.

Howell's view that thrombokinase is a lipoprotein has been adequately confirmed, and is now generally accepted.

Before leaving the 4-factor theory, we might briefly discuss the mechanism involved in the conversion of prothrombin to thrombin. There are two schools of thought on the question—the one enzymatic, the other chemical.

Morowitz regarded the action of thromboplastin and Calcium in Step 1 as purely enzymatic. In support of this view is the observation that thrombin can be prepared which contains no analytically demonstrable calcium; further, the amount of thrombin formed is independent of the amount of platelets used in excess of a minimum effective concentration, and varies directly with the amount of prothrombin used.

Nor is there agreement among the enzymatic school. An entirely different enzymatic theory, revolving around the proteases of the blood and tissue cells has been proposed by Ferguson. It has been observed that trypsin and snake venom will convert prothrombin to thrombin, and since they act in the absence of calcium, it has been suggested that platelets or tissue derivative together with calcium constitute a proteolytic enzyme, and act as a thromboplastic agent for the conversion of prothrombin to thrombin.

Other investigators, especially Quick and Seegers, regard the reaction between thromboplastin and prothrombin to be chemical in nature, calcium only acting as a catalyst. This seems to be the reasonable view, for in the reaction between thromboplastin and prothrombin, thromboplastin is quantitatively consumed which would not occur if thromboplastin functioned as an enzyme.

The second step of the reaction, i.e. the conversion of fibrinogen to fibrin by thrombin is regarded generally as enzymatic in nature.

Although fibrinogen, like prothrombin, is capable of being coagulated by certain proteolytic agents such as snake venoms, it has been shown that the fibrinolytic action of such preparations is due to contamination with plasmin, the proteolytic enzyme of the plasma.

It seems more likely that thrombin contributes to the formation of fibrin by potentiating a chemical linkage between fibrinogen molecules; the SH group in the fibrinogren molecule might be oxidized by thrombin, so that an S-S linkage between fibrinogen molecules could occur, with consequent construction of the fibrin lattice, thus:

2. (Fibrinogen—SH-Thrombin-Fibrinogen—S-S (Fibrin gel). ——————→

It is obvious that the classic theory leaves unanswered two vital questions—(1) what is the prime mover in the coagulation mechanism? and (2) what is it that normally maintains blood in the fluid state? Intimately bound with these questions is the defect in clotting in hemophilia, which might profitably be discussed at this point.

The most familiar explanation of what actually starts the coagulation mechanism was that originally put forward by Morowitz. He supposed that when blood was shed, the platelets disintegrated, liberated thrombokinase, which set the clotting mechanism in motion. In favour of this hypothesis was the supposition that platelets contain thromboplastin; these early investigations also saw apparent changes in platelet morphology at the inception of clotting, fibrin needles occurring at or near the locus of platelet disintegration.

In hemophilia, simple experimental evidence showed the defect to be a deficiency in thromboplastin. Since platelets are normal in number, it was suggested that hemophilic platelets were more stable than normal, and that they gave up their thromboplastic substance less readily.

Recently, however, evidence has accumulated that the deficient factor resides in the plasma rather than in the platelets. The work of Patek and Taylor and their associates is now familiar to everyone. They isolated a protein from the plasma, globulin in nature, which when injected into a hemophilic subject, reduced the clotting time to normal. Howell, in his Carpenter lectures, used the term plasma thromboplastin for this substance, and suggested that it was supplied to the plasma by the continuous destruction of platelets.

Quick has gone one step further in elucidating the nature of the thromboplastin deficiency as well as the role of the platelets in this disease.

He begins with the familiar observation that thromboplastin injected intravenously causes immediate intravascular clotting. Plasma, which also contains the anti-hemophilic substance, injected intravenously does not cause intravascular clotting, but it is effective in reducing the clotting time for 24-48 hours. In other words, the agent in tissue extracts is immediately reactive, or free, whereas in plasma the thromboplastin agent is in a bound or precursor form. To this thromboplastin precursor, Quick has applied the name thromboplastinogen.

Quick has also re-emphasized the role of the platelets in hemophilia; they are essential for the clotting of hemophilic blood, but not by virtue of their thromboplastin content. Instead, he postulates that platelets furnish an enzyme which converts thromboplastinogen to thromboplastin.

Quick's concept of coagulation may be represented thus:

1. Thromboplastinogen + Platelet Enzyme = Thromboplastin.

2. Prothrombin + Ca + Thromboplastin = Thrombin.

3. Fibrinogen + Thrombin = Fibrin.

Quick's work, which appeared in the American Journal of Medical Science is well worth studying by anyone at all interested in this problem. Such heresies as the fact that platelets do not contain thromboplastin, are supported by simple yet adequate experimental proof, which has not been refuted as far as I know.

Another defect of the classic theory is that it does not explain why blood normally remains fluid, a matter of some interest, for it is clearly as important that blood should not clot in one's vessels, as that it should clot outside of them.

The main reason why intravascular coagulation does not occur is the unbroken continuity of the vascular endothelial surface, which is inactive as regards clotting. This is not the only reason, however. Disease or trauma may cause extensive damage to the vessels, and only local thrombosis occurs, the great mass of circulating blood remaining reluctant to clot in the presence of active coagulants. This is almost certainly due to the presence of anti-coagulant factors which probably maintain a dynamic equilibrium with coagulant factors that are slowly produced in even normal circulating blood.

(It was recognized early on that thrombin rapidly disappears from serum after coagulation is complete. Morowitz, in 1924, concluded that thrombin was converted into an inactive form which he named "metathrombin." In 1935 Lenenhagger stated that this antithrombic factor was associated with the albumin fraction of the serum, later named "albumin X." This has been called the "progressive antithrombin" to distinguish it from heparin and its co-factor, or "immediate prothrombin." Anti-thrombin has properties similar to serum antitryposin or antiplasmin).

The anti-coagulant which has been most extensively studied is heparin. Discovered by McLean, in Howell's laboratory in 1916, it was found to occur in liver, lung, muscle, heart and blood. Chemically the substance is a mucoitin polysufuric acid eater, and it is by virtue of the strongly changed sulfuric acid group that heparin exerts its effect. It has been shown that the basop granules of the tissue mast cells are probably co posed of heparin: the position of these cells in t sheaths of vessels would enable them to discha their contents directly into the blood stream. T Swedish observers who discovered this fact are impressed by this relationship that they term th cells heparinocytes.

The main action of heparin is against thromb although it will also inhibit prothrombin a thromboplastin. The action of heparin on thro bin, however, is not direct, and depends for effect on the presence of a co-factor in the albu fraction of whole plasma.

The importance of heparin as a physiologi anticoagulant is still uncertain. If it is present normal blood it must be in very small amoun Certain conditions such as anaphylactic shock exposure to irradiation may cause such a rise blood heparin, that partial or complete incoag ability results.

Other anti-coagulant agents have been invok to account for the normal fluidity of blood; th a circulating anti-thromboplastin has been pos lated, mainly by Tocantins.

He believes that when blood is shed, the an cephalin is absorbed or inactivated, thus allowi the clotting mechanism to proceed. The defect Hemophilia is explained on the basis of an increa in anti-cephalin. Although Tocantins claims th glass, for instance, will absorb this anti-cephal elution of this substance has thus far failed, that the theory remains far from proved. Dur the past year the most stimulating work in t field has been in regard to additional clotti factors, or more specifically the apparently ne discovery of Factor V by Owren. I would li to end this discussion with a brief review of t five-factor concept.

Nolf, so early as 1908 suggested that prothro bin was not a simple substance but a mixture 2 factors which he named thrombogen and thro bozyme. Based on complicated experimental ev dence, his work suffered complete neglect, main however, because modern workers have failed read his published material.

Bordet, in 1912, also supposed a 5-factor theo he postulated an inert precursor of prothrom which was activated to prothrombin by cont with a foreign surface. Bordet's work is still co sidered fundamental and may be represen schematically as follows:

Proserozyme (prothrombin precursor) cont + Ca = Serozyme.

Serozyme (prothrombin) + Cytozyme = Thro bin.

Fibrinogen + Thrombin = Fibrin.

Still another 5-factor theory had been proposed by Howell. His fifth factor is in the nature of an anti-prothrombin which he believes is heparin. Normally an equilibrium exists between prothrombin and heparin, the latter being neutralized when blood is shed:

(Prothrombin-Heparin) + Thromboplastin = Prothrombin.

Prothrombin + Ca = Thrombin.

Fibrinogen + Thrombin = Fibrin.

This work, which was done between the years 1908-1912 remained stationary until Quick began to notice discrepancies arising out of this newly devised method of prothrombin estimation. He found that prothrombin is actually made up of two components, **a labile factor** which becomes inactive after a few days storage, and a **stable factor** which is reduced by the in vivo effect of dicoumarol. The heat labile factor which is not adsorbed by AL $(OH)_3$ was originally called component A, and the heat stable factor which is strongly adsorbed by AL $(OH)_3$ was originally called component B.

Meanwhile Owren, working in enemy occupied Norway, and oblivious to these events, discovered what he thought was an additional clotting factor. In a patient with idiopathic hypoprothrombinemia, he found, that the addition of normal plasma, from which prothrombin had been removed by adsorption with AL $(OH)_3$, would reduce the prothrombin time of the patient's plasma to normal. Owren called this factor which was deficient in his patient factor V, being the fifth clotting component. He went on to isolate this factor in a state of relative purity, and found that it is very labile and not adsorbed by AL $(OH)_3$.

Quick has not been slow to recognize that Owren's factor V is probably identical with his own labile factor. It must also not be forgotten that Nolf's fifth factor which he called thrombinogren, is identical with the newly described factor V of Owren and the labile factor of Quick. All descriptions portray a relatively labile substance, not adsorbed by such substances as AL $(OH)_3$, and which is necessary for the coagulation, by thromboplastin and Ca, of a mixture of fibrinogen and the conventional prothrombin. The priority of this discovery must rest not with Owren, but with Nolf.

Unfortunately the matter has not been allowed to remain as simple as this. Quick, from studies of two families with inherited hemorrhagic diathesis discovered yet a third type of prothrombin which was neither his old component, A or component B. To avoid confusion he proposed calling his original component A the **labile factor,** and the new component, which is reduced in Vitamin K deficiency, component A.

1. Labile Factor (old component A)
   Heat Labile
   Not adsorbed by AL $(OH)_3$ — Owren's Factor V
   Inaction on storage — Nolf's Thrombogen
   Plasma AC Globublin (Seegers)
2. Component B
   Heat stable.
   Adsorbed by AL $(OH)_3$
3. Component A
   Reduced in Vitamin K deficiency.

And if Owren had not caused enough confusion with his Factor V, he now considers it necessary to postulate a derivative of Factor V, which autocatalytically activates prothrombin in the presence of thromboplastin and Ca. He proposes that a Factor VI is generated that explains this autocatalytic reaction, although the phenomenon is far from clear:

Prothrombin + Factor V-Thromboplastin + Ca Factor VI.

Factor VI — true activator of prothrombin.

Seegers and Ware, in this country, have taken up and expanded this concept. They have named Factor V the plasma Ac-globulin, and Factor VI the serum Ac-globulin. They present the following concept of coagulation.

I. First Reaction

$$\text{Prothrombin} + \text{Thromboplastin} \xrightarrow{Ca++} \text{Thrombin.}$$

This permits the key concept that serum Ac-globulin is the result of thrombin being formed first.

$$\text{II. Plasma Ac-globulin} \xrightarrow{\text{Thrombin}} \text{Serum Ac-globulin.}$$

The following reactions then gain impetus:

a) $\text{Prothrombin} + \text{Thromboplastin} \xrightarrow{Ca++} \text{Thrombin}$ (Serum Ac-globulin.)

b) $\text{Plasma Ac-globulin} \xrightarrow{\text{Thrombin}} \text{Serum Ac-Globulin}$

III. The thrombin titer soon rises high enough to cause clotting of fibrinogen as follows:

$$\text{Fibrinogen} + \xrightarrow{\text{Thrombin}} = \text{Fibrin.}$$

At the present there is no useful purpose in pursuing this autocatalytic reaction. The arguments for and against a Factor VI are too involved to pursue here, and largely speculation at best. Since the assumption of its existence complicates, rather than simplifies the concept of thromboplastic action it is best at present to stick with the three stage concept as outlined by Quick:

That platelets on contact with a foreign surface rupture, making available some factor which reacts with thromboplastinogen, to form thromboplastin

which in turn reacts with the prothrombin complex. This complex has been shown to consist of Ca, prothrombin components A, B, and the labile factor or Factor V. The exact relationship of these components to each other is not clear, and a more specific designation is unjustified at this time. The adequate production of thrombin under the influence of thromboplastin. Once thrombin is formed, it reacts with fibrinogen, possibly, by oxidizing the sulphydryl group in the fibrinogen molecule.

It may seem curious that blood coagulation which is such a small fragment of total bodily activity should be so complex. Perhaps the intensive investigation, with the artificial separation of these factors, has exaggerated the complexity. Perhaps this limitless complexity underlies even the simplest of biological processes. The fact remains, that we do not yet have an answer to the problem.

CANCER

Edited by D. W. Penner, M.D.

Abstract

Siris, Irwin E., Malignant Tumors of the Small Intestine, Report of Four Cases. Am. J. Surg., p. 573, May, 1949.

Incidence:

Malignant tumors of small intestine comprise 3% of all malignant tumors of the G.I. tract. 45% of primary carcinomas of the small bowel are in duodenum. In one large autopsy series of 137,000 the incidence of malignant small bowel tumors was 0.1%. 60% of all intestinal sarcomas occur in the small bowel. Carcinoma in the small bowel is twice as common as sarcoma. Malignant tumors occur with equal frequency in all three divisions with sarcoma being more common than carcinoma in the ileum.

Carcinoids are not included in this survey but they constitute one-third of all malignant neoplasms of the small bowel. Carcinoids are, however, twice as frequent in the appendix as in the small bowel.

Classification:

1. Stenosing, napkin-ring like and constricting.

2. Infiltrating—ulcerating, fungating and gelatinous papillary.

3. Polypoid, single or multiple and fungating.

All three categories may be found in one case. Sarcomas may grow asymmetrically into mesentery or into the peritoneal cavity or become adherent to other viscera. Characteristically they grow circumferentially gradually causing obstruction. Rarely polypoid tumors may cause intussusception. Leiomyosarcomas are uncommon and seldom occlude the bowel lumen. They develop slowly with a tendency to grow in bulk, degenerate and form cysts and thus may attain an enormous size.

Spread:

Carcinomas metastasize early to mesentery, regional nodes, peritoneum, liver, lungs, brain, bone and skin.

Diagnosis:

1. Early symptoms are vague intermittent G.I. distress and distension bearing no relation to meals followed by weakness and severe anemia.

2. Correct X-ray interpretation rarely made before onset of partial obstruction. The more proximal the lesion the more distressing the complaints and the more readily the X-ray manifestations are recognized.

Prognosis is Poor Because:

1. Disease rarely recognized before obstruction occurs and then it is generally too far advanced for a successful outcome.

2. X-ray diagnosis is difficult to establish in early stages.

3. Operation invariably discloses extension to and fore-shortening of the mesentery and the invasion of the rich lymphatics in the inaccessible upper segments of the mesentery precludes radical extirpation.

4. If thorough extirpation of involved lymphatics cannot be effected recurrence and metastasis is to be expected within a few weeks to two years.

5. The disease is radio-resistant.

Earlier Recognition May Possibly be Accomplished by:

1. Close evaluation of history.
2. Improvement in radiographic studies.
3. Comprehensive repeated laboratory investigations.

J. D. Adamson, M.D.

UROLOGY

The Use of Streptomycin in Urology*

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During the past fifteen years the treatment of urinary infections has been completely revolutionized by the introduction of new drugs and modern methods of investigation. Streptomycin was first isolated in 1944 and constitutes **a recent addition to the growing list of urinary antiseptics.

Streptomycin is a potent antibacterial agent in urinary tract infections produced by a large group of susceptible organisms. Its greatest value lies in its specific action against organisms that are resistant to penicillin, the sulfonamides and other antibacterial agents. The complete range of antibacterial activity of streptomycin has not been determined but it is known to be most effective against gram negative organisms. There is a significant degree of antibacterial activity against gram positive organisms also, but streptomycin is generally less efficient in this regard than penicillin. Wide variation exists in suceptibility to streptomycin among different species of bacteria. Wide variation also exists in the susceptibility of different strains of the same species. Practically all organisms common to urinary infections are capable of developing resistance to streptomycin. This may occur during the course of treatment if dosage is insufficient to completely destroy the offending organism within a short space of time.

These facts make it obvious that without a preliminary bacteriological survey and without determining streptomycin sensitivity of the offending organism intelligent therapy is impossible. Sensitivity is measured in units or micrograms of streptomycin sufficient to inhibit the growth on 1 cc. of medium. The best response to treatment is obtained when sensitivity is 16 units or less per cc. If bacteria are not inhibited in vitro by a concentration of 16 units per cc. chances of their complete elimination are not good.

Following intramuscular injection streptomycin is rapidly absorbed into the blood stream and 60 to 80% is excreted by the kidneys within 24 hours. If renal function is impaired, urine levels of streptomycin are low and blood serum levels correspondingly higher. While the action of streptomycin upon the urinary tract is enhanced by this high rate of excretion, its successful use is also dependent upon the delivery of this drug via the blood stream to the tissues themselves.

*Read before the Winnipeg Medical Society, Dec., 1948.

**Aureomycin, Polymyxin and Chloromycetin are more recent antibotics used in urinary infections.

Sensitivity to Streptomycin of Bacteria Responsible for Urinary Infections

Most Effective

Esch. Coli
Vulgaris
B. Proteus—Ammoniae
Morgagni
Aerobacter Aerogenes
Klebsiella Pneumoniae (Friendlander)
Shigela
Erbethella Typhosa
Hemophilus Influenza

Less Effective

Pseudomonas Aeruginosa (Pyocyaneus)
Salmonelleae
Strep. Fecalis
Other Enterococci
Diphtheroids

Variable Effects

Gram Positive Cocci

Evidence of Some Effect

Myobacterium Tuberculosis

Effective in Certain Venereal Diseases

Gonorrhoea and Granuloma Inguinale

Re the Above Classification the Following Points Should be Noted

1—Strain variations in susceptibility are sometimes greater than between two or more species of bacteria. This indicates the unreliability of any classification and accentuates the necessity for streptomycin sensitivity tests.

2—Gram positive cocci show wide variation in their susceptibility to streptomycin. Those that are insensitive to penicillin and the sulfonamides may respond to streptomycin.

3—Strep. Fecalis and the enterococcal group may be resistant to chemotherapy and anti-biotics. Mandelic acid is still considered the best drug for this type of infection.

4—Streptomycin is highly effective in infections with B. Proteus—a member of the urea splitting group.

5—Urinary infections with Pseudomonas Aeruginosa (B. Pyocyaneus). B. Pyocyaneus is commonly but incorrectly believed to be only a nuisance with saprophytic and not pathogenic activities. This is the result of improper differentiation of the bacterial strains in the group with their relative virulence. This organism belongs to the Pseudomonas Aeruginosa group, three strains of which are distinctly pathogenic in the urinary tract. A mucoid variant has been shown to have very high virulence. The Pyocyaneus is not affected by sulfonamides or penicillin but has shown some susceptibility to streptomycin with the possible exception of the mucoid variant.

Effects of Streptomycin in Mixed Infections

If all organisms are sensitive then results should be as good as in a single organism infection. Many of the pathogenic organisms that are insensitive to penicillin and the sulphas are susceptible to streptomycin and vice versa. Hence in a mixed infection the best results may be obtained by combining streptomycin with penicillin or with the sulfonamides, since clinical experience has shown all these drugs to be compatible.

Site of Infection

Infections within all parts of the urinary tract except the prostate gland and epididymis may be favourably affected by streptomycin. Studies of prostatic secretion and assays[1] of prostate glands and epididymes removed at autopsies in patients who had received streptomycin failed to reveal assayable amounts of this drug. This would indicate that streptomycin does not find its way into the prostate gland or epididymis in sufficient amounts to kill organisms.

The Administration of Streptomycin

When streptomycin first became available, treatment followed that customarily used for penicillin and the drug was administered every three hours. However, laboratory studies have shown that such frequent injections are not necessary and that three or four injections per day are sufficient. Blood levels were assayed and detectable amounts of streptomycin were found from 24 to 36 hours following a single intramuscular injection. Streptomycin is retained in the blood in effective therapeutic concentration for relatively long periods of time thereby permitting more convenient spacing of injections.

In dealing with highly sensitive organisms 1 gram daily may be given in 4 divided doses. With less sensitive organisms, 2 grams daily should be given in 6 divided doses. There is no advantage in a second course if the first has failed.

Fluids should be restricted to an intake of 2500 cc's. This will give urinary streptomycin levels of 500 to 2000 units per cc., providing renal function is normal.

Alkalinization of the urine to an optimum pH. of 7.4 will considerably enhance the bacteriostatic effect of streptomycin. In vitro experiments have shown that the effectiveness of the same concentration of streptomycin is increased 16 fold by raising the pH. from 5.5 to 8. This effect is produced by the oral administration of Soda Bicarb. and Potassium Citrate aa gr xv O.H. iv. In dealing with urea splitting infections the advantage of alkalinization is offset by the increased tendency to calculus formation. In such conditions alkalies should be withheld.

Streptomycin used locally in the urinary tract in the form of instillation or irrigation is of no value.

In oral administration of streptomycin 95% of the drug is recovered from the stool and only 2% from the urine. It is capable of eliminating sensitive pathogenic organisms from the intestinal flora thereby indirectly affecting the urinary tract. Combined with sulfathalidine it is very useful in preparing a patient for ureterointestinal anastomosis. The usual oral dosage is 2 grams daily.

Effect of Streptomycin Upon Certain Venereal Diseases

1. Granuloma Inguinale. The Donovan bodies which are present in lymph nodes disappear early in the course of streptomycin therapy. Dosage is 1 gram daily and treatment is continued until all lesions have disappeared. Other forms of treatment such as tartar emetic or sulfa are of questionable value while penicillin is of no use.

2. G.C. Penicillin remains the undisputed therapeutic agent in the treatment of G.C. If resistance to penicillin should develop it is encouraging to know that streptomycin is also a useful drug. Single injections of aqueous streptomycin are known to have cured acute gonorrhoea. The slow elimination of streptomycin is probably an important factor in the excellent results obtained.

Urinary T.B.

Some difficulties encountered with streptomycin therapy.

1—Myobacterium tuberculosis requires prolonged treatment.

2—Toxic reactions are frequent.

3—Development of resistance.

Because of the morphologic similarity between the Bacillus Leprae and the Myobacterium Tuberculosis and because the waxy capsule of the former has been successfully damaged with the esters of the oil of Chalmoogra, the hypothesis has been developed that perhaps the waxy fatty capsule which protects the M. Tuberculosis could be softened or conditioned by dissolving it with the oil. The organism would then be less resistant to streptomycin in smaller doses for shorter periods of time.

The combined synergistic action of the oil referred to as Moogrol and streptomycin may prove to be a distinct advance in the treatment of urinary T.B.[2].

A course of treatment consists of daily injections of 1 cc. moogrol intra-muscularly for 37 days. After 7 days of moogrol streptomycin is begun—1 gram daily divided into 4 doses and both are then continued for 30 days. This treatment is of particular value in relieving the symptoms of tuberculous cystitis. It is definitely palliative in advanced inoperable lesions and it is also used in conjunction with surgery.

Effects of Other Lesions

The coexistence of other pathological processes

in the urinary tract reduces the efficiency of streptomycin. Obstruction to the normal urinary flow, and foreign bodies such as stones or catheters may cause prompt recurrence of symptoms or re infection as soon as therapy is discontinued. Drug fastness usually results so that a second course is of no value. Obstructive uropathy such as stone, tumour, stricture or other structural abnormalities should first be surgically removed or corrected. Streptomycin is ineffective in cases of suppuration where surgical drainage has not been instituted. It is wrong to treat such lesions when surgery is not contemplated unless one is dealing with a fulminating infection, bacteriemia or septicemia, then streptomycin may be a life saving measure. In association with corrective surgery streptomycin may be used pre and post operatively.

Paraplegia

The paraplegic patient goes through a long period of catheter drainage, during which time he is subject to urinary infections and stone formation. It is well to withhold streptomycin unless infection is severe and the organism is resistant to other forms of therapy. Drug fastness will inevitably result if streptomycin is used indiscriminately. It is best to reserve streptomycin therapy for the treatment of infection after the reflex automatic bladder has been achieved.

Conclusion

Never before in the history of urinary infections have so many organisms been destroyed by so few drugs. Streptomycin has helped to close the gap in the ring of therapeutic agents that is being forged around the organisms which cause the bulk of urinary infections. It does not complete the ring perfectly but the urologist has been given an effective weapon against infections that are uninfluenced by any other known anti-bacterial agents.

Summary

Streptomycin is the most recent addition to the growing armamentarium of therapeutic agents dealing with urinary infections. Wide variation exists in susceptibility of different species of bacteria and among different strains of the same species, although it is most effective against gram negative organisms. Special comment is made upon the action of streptomycin in the urea splitting infections, Pseudomonas aeruginosa, Gonorrhoea, Granuloma inguinale and mixed infections. In the administration of streptomycin it is pointed out that alkalinization is essential for maximal effect. For urinary T.B. streptomycin is administered in conjunction with Moogrol. The co-existence of other pathological processes reduces the efficiency of streptomycin. Special indications for the use of streptomycin are outlined.

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SURGERY

Edited by S. S. Peikoff, M.D.

Transmetatarsal Amputation for Diabetic Gangrene of Toes

A. P. Guttman, M.D., F.R.C.S. (Edin.), F.I.C.S.

In many patients with diabetes one can secure a serviceable and useful foot by amputation through the transmetatarsal region. The mildness of the diabetes affords no protection against the development of gangrene. A diabetic should be warned not to walk on a sore toe; the anaesthetic foot is least resistant to infection and therefore the most dangerous.

With the advent of penicillin, the control of infection is now possible to such a degree as to permit the carrying out of conservative surgical procedures on these patients. Prior to the introduction of penicillin the employment of local operation through or near an area of infection in a pulseless foot with deficient collateral circulation was fraught with danger. The use of the transmetatarsal amputation just proximal to the metatarsal heads can be made safe and practical because local infection and septicaemia can now be eliminated, which formerly were serious for diabetics.

The first transmetatarsal amputation in a diabetic at the New England Deaconess Hospital in Boston[1] was done in March, 1944. The experience accumulated there is sufficient to cause the conviction that amputation through the metatarsal bone is practical and safe with the use of penicillin. The functional result is good. I believe it will continue to be the method employed following proper preparation and the use of penicillin in proper dosage and as such will obviate the necessity of amputation at a higher level in many cases. Spinal anaesthesia was used for all these operations.

One hundred and thirty-three transmetatarsal amputations[2] were carried out in one hundred and twenty-two diabetic patients at the above hospital between March, 1944, and September, 1947. Of these twenty-two did not heal, but in three of them a thigh amputation was not necessary. The remaining nineteen required a later thigh amputation. The majority of these operations were on patients 51-80 years of age, the average duration of the diabetes being 10 years in the successful amputations and 14 years in the failures. The

long duration of diabetes is not therefore a contra-indication, although in general the longer the duration of diabetes the more serious is the risk.

In this series some type of trauma was usually present, often slight, such as cutting a corn or pricking of a blister that had broken, but the commonest lesion was an infected callus with extension into the bone or joint. This extension of infection to a bone or joint with osteomyelitis is rare in the patient without diabetes. In many cases in which lymphangitis or infection extended above the ankle, penicillin in sufficient dosage resulted in a subsidence of the infection to permit the transmetatarsal amputation to be done.

In many patients the condition of the circulation, both local and general, is an important factor in determining success. The presence or absence of normal palpable pulsations in the dorsalis pedis, posterior tibial and popliteal arteries are of chief importance. In the successful cases in this series, pulsation was absent in 76 and present in 35 cases, while it was absent in 21 out of the 22 failures.

Staphylococcus aureus is the most important single organism causing infection, and it is presumed it gains entrance through an injury or break in the skin, and with the poor local resistance of diabetic tissue, invades soft tissues and bone and joint.

Anaesthetic feet heal readily after surgery but continued walking after a time results in pressure areas, ulceration and infection and the resistance to infection in this group appears to be even lower than in the diabetics as a whole.

In this group the transmetatarsal amputation was done as a matter of desperation in many cases to save one foot after the other had already been amputated.

In the follow up study, out of 45 patients operated on in 1944 and 1945 who were examined or through a doctor's report in 1948, 30 are still healed and walking and those in the period 1946-47, out of 87 successful operations, 70 are still healed and walking.

Case Report

Mrs. R. S., age 60, was admitted to St. Joseph's Hospital, Winnipeg, on June 16th, 1948. She gave a history that on June 1st last she was cutting a toe nail, the scissors slipped and cut the 2nd toe of the left foot. By June 5th the toe became dark in color and swelling of the foot followed. She was put on penicillin, 60,000 units every three hours and this was subsequently reduced to 40,000 units.

I first saw her in consultation on July 13th, 1948. At that time there was gangrene of the little toe and an area on the dorsum of the foot, with an abscess in the soft tissues of the sole of the foot behind the metatarsal heads. The dorsalis pedis and posterior tibial pulses were not palpable in either foot. At times the left popliteal pulse could be felt. At that time I advised an amputation of the leg. X-rays of the left foot on July 9th, 1948, showed absorption of the terminal two phalanges of the second toe with considerable interstitial gas present in the sole of the foot and medial to the head of the first metatarsal bone. Summary of X-ray findings: "Osteomyelitis and plantar abscess with gas formation." Amputation was refused and she was treated symptomatically and penicillin was continued. She was seen at intervals during which time sloughs appeared on the sole of the foot and dorsum. Under penicillin and diabetic control the sloughs gradually healed, the second toe remaining gangrenous. X-rays on October 21st, 1948, showed considerable progression of the destructive processes involving the terminal portions of the metatarsals and phalanges.

On November 26th, 1948, a transmetatarsal amputation through the shafts of the metatarsals was done under spinal anaesthesia without a tourniquet. Her convalescence was uneventful. She was given procaine penicillin 300,000 units daily post-operatively until December 14th, 1948. On December 8th she sat up in a chair and commenced walking about six weeks after the operation.

Post-operative X-rays were taken on January 7th, 1949, and these show an amputation through the upper ends of the metatarsal shafts with no evidence of any new bone infection.

While in hospital her diabetes was managed by Dr. S. D. Rusen.

She was last examined on March 22nd, 1949. At that time she was walking quite well without a cane. She can dorsi flex and plantar flex the remaining part of the foot and can invert and evert fairly well. The skin of the foot is well healed, feels warm and is not devoid of sensation.

Comment

A case of transmetatarsal amputation for diabetic gangrene of the toes is presented together with a resume of some of the current literature on the subject. A good functional result was secured. In this case a higher amputation originally recommended was refused. It is very difficult for a patient in the older age groups to wear a prosthesis and as this patient rooms with a private family on the second floor, it would have probably meant spending most of her remaining years in bed and the psychological aspect of an amputated lower limb in her case would have been detrimental. At present she is totally independent of others for help in getting about and is quite happy with the result she has secured.

I am indebted to Dr. M. Brookler for permission to publish this case.

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ORTHOPEDICS

Reported by F. G. Stuart, M.D.

Meeting of the American Academy of Orthopaedic Surgeons

Report by W. B. MacKinnon, F.R.C.S. (C)

The Early Diagnosis of Congenital Dislocations of the Hip

Two men talked a good deal about this and showed an excellent movie. Vernon L. Hart of Minneapolis, has enlisted the services of his Resident in Paediatrics and also general practitioners, teaching them the early signs. The most significant single sign present demonstrable soon after birth is limitation of abduction in flexion on the affected side. Very few cases will be diagnosed early if the sign of telescoping is relied upon. These cases are not at first as a rule dislocations, but rather congenital dysplasia of the acetabulum and head of the femur. True dislocations may never occur, but osteo-arthritic changes with X-ray evidence of shallow acetabulum and a deformed head of femur may persist. X-ray signs may be useful once the lesion is suspected clinically. Hart uses the Frejka Splint. This is an abduction pillow splint, and maintains the child in the equivalent of the frog leg position. Treatment is not initiated beyond the age of one year with this method, because the abductor spasm becomes too great. Excellent X-ray results were demonstrated by the use of this method, and were obtained in a few months.

J. C. Risser of Pasadena, California, also had an excellent exhibit demonstrating the application of these principles. He used a splint very much like the Putti splint for congenital hip, to be worn at night, and for walking, used a special sling which he claimed would maintain the head in position. It was what he called a trochanter belt. The abduction pillow splint was certainly much more impressive, and only requires one gadget instead of two.

Equalization of Leg Lengths

Warren White, Greenville, N.C. This was an excellent course. He finds that epiphyseal arrest is best applied during the ages from 9 to 12 years. Growths occurring at the lower femoral epiphysis average 3/8" per year: at the upper end of the tibia, 2/8" per year. He has worked this out on observation on many cases, and on a special series of sixty. He uses his own method of epiphyseal arrest which is essentially the removal of a square plug from the epiphysis and right angle rotation, followed by curettement. This is merely a modification of Phemister's method. He mentioned the method of Walter Blount which he believes may be an improvement.

The Method of Walter Blount of Milwaukee

Blount has found that the growth of the epiphysis may be arrested by the use of stainless steel staples. He began with one staple, and found that this invariably broke. He tried two—these staples will bend. Three staples, however, will hold firm and completely arrest the growth. For complete growth arrest, he uses three staples on each side, using an open procedure, and also radiological checks on the table. His results were most impressive. Furthermore, he has applied this method to the treatment of knock-knees and genu recurvatum. In the case of knock-knees, he staples the inner femoral epiphysis, and in the case of genu recurvatum, staples the femoral epiphysis posterior to the mid-line, in order to arrest growth and to permit continued anterior growth. He further presented evidence to show that, when desirable, the staples could be removed, and growth would continue at the normal rate. This has been in use for a number of years by himself, and may prove to be a very definite advance in the treatment of these conditions.

White does not like the step method of shortening of the femur. He says he has had many letters from doctors using this method and running into difficulties. He uses the straight overlap with three or four screws. He does admit, on questioning, some difficulty at times in closing the wound. He uses transfixion pins with plaster and distracting turnburckles as employed for leg lengthening of the femur and tibia. White uses a square mortising chisel for femoral arrest. He has found that femoral arrest should not be done before the age of eight years as a rule. The reason for this is that the individual, if arrest is done too early, may assume the appearance of a dyschondro-plasiac.

Course on the Suction Socket

Harold C. Sofield, Chicago, reviewed 130 cases, and he comes to the conclusion that it is a very useful socket in most individuals. There is some initial swelling and discomfort from the suction. Certain nervous individuals will not tolerate these conditions, and will never come to use this type of prosthesis. In the United States, it costs $75.00 more than the standard ischial bearing type of prosthesis. The valve which is now in common use permits a small amount of leakage so that the suction does not become too great. More than 1½ lbs. suction per square inch induces swelling, and sometimes capillary haemorrhage. The latest value can be regulated as to the amount of leak.

The Advantages of the Suction Socket

1. There is no belt or harness.

2. Gait is improved—The prosthesis feels a part of the individual.

3. No stump sock is worn.

4. There is freer movement of the prosthesis as it sticks close to the stump.

5. There is great reduction in the weight of the prosthesis.

Cylindrical stumps are regarded as being more favourable than conical stumps. A little redundancy is not a contraindication to fitting. The fitting is primarily done by measurement. Fitting of any stump, less than six inches in length is not advised. Obesity makes fitting more difficult owing to the development of wrinkles which may permit air to leak in. Adherent scars, particularly those which run above the top of the socket, give a channel for air to leak, and suction may be lost. There are two types of fitting: the ischial-bearing, and the gluteal-bearing, where the stump fits into the prosthesis very much as the cork fits into a bottle.

The Disadvantages

1. Sensation of pulling on the stump.
2. Sensation of burning.
3. Perspiration—most annoying in hot weather

Note: Silicate gel in the bottom of the prosthesis in the bucket will absorb a part of this moisture.

4. Embarrassing noises.
5. Skin irritation and discolouration.

It is not advisable, in the light of present knowledge, to fit this type of a bucket to an arteriosclerotic stump. It has, however, been fitted to cases of Buerger's Disease: it is too early to say whether or not this is wise. Cold weather is no disadvantage. Some individuals have worn a suction socket for as long as 72 hours without removing it, and without ill effect. The interior of the bucket is best painted with cellulose acetate.

Method of Reduction of Colles' Fracture using Thumb Traction, followed by pronation and ulnar deviation of the hand, R. G. Carothers and J. J. Giannestras, Cincinnati, Ohio.

Plaster is then applied as usual. Does not as a rule bring plaster above the elbow.

Clinical Evaluation of the Merthiolate Bone Bank

Fred C. Reynolds and David Oliver. Chemical preservation of homogeneous bone by the use of Merthiolate. This substance in solution has been used by the plastic surgeons to preserve cartilage for the past ten years. Cadaver bone, removed by aseptic technique, is preserved in 1/1,000 aqueous merthiolate solution. This is changed to 1/5,000: Solution under aseptic conditions every two weeks, and kept indefinitely. This bone has been used in 36 cases. No sinuses have developed, and no mercurial poisoning has resulted. Grafts unite in the same average time as found for fresh bone.

The Disadvantage

Frequent handling and danger of mercurial poisoning has not been sufficiently elucidated. Wise to conduct further experimentation.

Highlights of the Meeting of the American Society for Surgery of the Hand

Median Nerve Neuritis

George S. Phalen of Cleveland, Ohio, described four cases of Median Nerve Neuritis diagnosed by atrophy of the thenar eminence and sensory changes, either hypalgesia or hyperaesthesia of the median distribution in the hand. More central lesions having been ruled out, the median nerve was explored deep to the volar carpal ligament. The nerve was found sometimes with a fusiform enlargement, and in other instances with a neuroma-like enlargement, usually at the proximal end of the volar carpal ligament. The volar carpal ligament was left open and the more superficial structures were closed. In all cases, relief was obtained. The chief complaint is of pain.

In the discussion, Sterling Burnell stated that he had seen six such cases. In one he believed the condition to be due to hypertrophy of the sublimis muscle, and in another, to an aberrant artery. Mayer of New York, described one case which he believed to be due to a prominence of the lower end of the radius.

Acute Tenosynovitis of the Hand

Comparative Results of Treatment

J. Edwards Flyn of Boston, Mass., has selected the following method: Wide drainage through a mid-lateral incision along the finger, and irrigation with 200,000 units of Penicillin injected proximally in the sheath. A wide tissue drain or Penrose drain was used for 24-48 hours, not into the sheath but just to the sheath. This was followed by the use of 100,000 units of Penicillin every three hours. A splint was used with the hand in the functional position. Incision was from the base of the proximal phalanx.

Visor Flaps

W. Brandon Macomber, Albany, N.Y. In certain cases where a portion of a finger is amputated, there is a problem of covering the distal stump. A visor flap may be used in some of these to cover the raw end. Care must be taken not to kink the flaps. An immediate flap with sensation may thus be provided. The denuded portion may then be covered by a split thickness graft.

ANAESTHESIOLOGY

Edited by R. G. Whitehead, M.D.

Abstract

Cyclopropane Anaesthesia

The immediate decrease in blood pressure seen at the conclusion of cyclopropane anaesthesia "cyclopropane shock." Robert D. Dripps, M.D., Department of Anaesthesia, Hospital of the University of Pennsylvania (Anaesthesiology, January, 1947, Volume 8, Number 1).

This important article deals with a condition which unfortunately is well known to all anaesthetists and most surgeons. The precipitate drop in blood pressure after an apparently uneventful anaesthetic and surgical intervention has been all too familiar in the past and is certainly not unknown today. The author points out that the outstanding criticism of cyclopropane is that of its action on the circulation. The abnormalities seen when using this anaesthetic agent include cardiac irregularity, increased oozing at the operative site, a rise in blood pressure during anaesthesia and a drop in pressure at its conclusion.

Clinical Description of "Cyclopropane Shock"

The blood pressure is elevated during the anaesthesia but when the mask is removed the blood pressure drops, sometimes within three to five minutes, to fifty or sixty millimetres of mercury systolic or lower. At other times the drop in blood pressure is slower and of less alarming proportions. In those patients showing an immediate sharp fall of blood pressure the skin is clammy, the pulse of poor volume and emergence delerium may be profound. The pulse rate is slow in contrast to the fast pulse usually seen in surgical shock. Other patients with less drastic falls in blood pressure post-operatively appear to be in relatively good condition, with a warm, dry skin and a slow pulse. These patients are alert and oriented and rarely give cause for alarm although the blood pressure may remain low for several hours despite intravenous therapy.

Clinical Observations

The author showed conclusively by careful and detailed measurements of the cyclopropane concentration, the PH and the carbon dioxide tension of arterial blood, the blood pressure, the respiratory rate and tidal air in seventeen patients undergoing major surgery that "Cyclopropane shock" is due to retention of carbon dioxide which gives rise to a respiratory acidosis. This in turn is due to the powerful respiratory depressant action of cyclopropane. A decrease in plasma PH and the carbon dioxide content of arterial blood was always associated with a definitely reduced tidal volume and a rise in blood pressure, and was always followed by a drop in blood pressure when the anaesthetic was discontinued. Conversely if there was no acidosis and no marked decrease in tidal volume during anaesthesia then no drop in blood pressure occurred post-operatively. Those patients in whom the syndrome is present always exhibit a moderate hyperpnoea post-operatively and it is thought that this rapidly changes the acid base balance and probably accounts for the hypotension.

This post-operative hypotension can occur with other agents where the tidal respiratory volume is seriously reduced such as with pentothal curare anaesthesia. It is very difficult to reproduce it with straight pentothal anaesthesia probably because of the relative anoxia stimulating respiration during anaesthesia and the continued central respiratory depression post-operatively, a general levelling of tidal volume being found. It probably never occurs with ether anaesthesia as the tidal respiratory volume cannot be depressed sufficiently except with gross and obviously dangerous overdosage.

The author also points out that breathing against resistance in a closed system, e.g. caked soda lime, and the sudden drop in the oxygen content of the respired gases at the conclusion of the anaesthetic may possibly aggravate the condition.

Treatment

This consists largely in prevention, through maintenance of adequate respiratory exchange throughout the anaesthetic. Once the condition has developed, blood, plasma or 5% dextrose in normal saline should be administered intravenously, the rate of administration varying with the degree of hypotension. Apomorphine 1/40 of a grain in 10 cc.'s of normal saline given intravenously over a period of a few minutes will control any excitement. Oxygen therapy should be used but it is not thought to help in any great degree. It would seem that carbon dioxide inhalations should be tried as well as small doses of morphine.

Abstractors Note

The incidence of this unpleasant complication has been greatly reduced since the above paper appeared. It is important to remember that the basic cause of the condition is a reduced tidal volume which can be aggravated by morphine, premedication, an inadequate airway, or by any position on the operating table that reduces the tidal volume such as the steep Trendelenberg position. It may also be produced by inefficient or worn out soda lime in the carbon dioxide absorber.

A long operation or one where the blood loss is excessive naturally makes the condition more likely or aggravates it. It is probably not too much to say that the difference between good and poor anaesthesia with modern techniques depends on an adequate tidal volume being maintained throughout the anaesthetic. In many cases this can only be assured by judicious aided or augmented respiration by manual pressure on the rebreathing bag during inspiration. This may have to be maintained for long periods where the relaxation is profound such as in upper abdominal surgery.

F. A. Walton, M.D.

PATHOLOGY

Abstracts

Presented at the Journal Club Meeting

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This is a review of articles appearing in the Archives of Pathology and the American Journal of Pathology from January to June, 1948. No attempt has been made to review every article published during this period but only those which are likely to be of practical value to the clinician and presented. The reports of experimental work in animals in particular are omitted not because they lack importance since many of them are of a fundamental nature but because often their clinical implications are not clear.

Primary Systemic Amyloidosis—Iverson, L., and Morrison, A.B., Arch. Path. 45: 1-20, 1948.

Two new cases are reported bringing the total number of cases reported to the time of publication to 44. Primary systemic amyloidosis is characterized by involvement of the cardiovascular system and tissues of mesenchymal origin and the absence of chronic illness whereas secondary Amyloidosis is associated with a chronic suppurative illness, e.g. open tuberculosis, osteomyelitis, syphilis, etc., and involves the kidney, liver, spleen and other organs.

Hepatic Abscess: Factors determining its localization. Kinney, T. D., and Ferrebee, J. W., Arch. Path. 45: 41-43, 1948.

The factors determining the localization of liver abscess are introduced by a quotation from Mark Twain where "They talked about how Ohio water didn't like to mix with Mississippi water." This is followed by a recital of experimental and clinical evidence that ulcerative and malignant diseases in the caecum are more likely to produce secondary lesions in the right lobe of the liver and that lesions which are predominantly rectal or sigmoid are more likely to produce lesions in the left lobe of the liver. Resection of a secondary neoplasm in the left lobe of the liver together with the primary growth in the sigmoid colon is thus a rational procedure. They reviewed 229 cases of liver abscess from autopsy files of various Boston hospitals and were able to confirm the previous work.

Triple Synchronous Primary Carcinoma — Gordon, B.S., Arch. Path. 45: 56-64, 1948.

A case is reported where an adenocarcinoma of the prostate with extensive metastases and epidermoid carcinoma of the lung with metastases to cervical lymph nodes and a papillary carcinoma of the thyroid occurred simultaneously. This is an exceedingly rare occurrence but at least 10 authentic cases have been reported. It is estimated to occur about once in 20,000 autopsies. Two primary cancers in the same patient is estimated to occur in about 3% of autopsies on patients with cancer.

Spread of Carcinoma to the Spleen: Its relation to generalized carcinomatous spread. Harman, J. W., and Dacorse, P., Arch. Path. 45: 187-215, 1948.

The idea that the spleen is resistant to metastases is erroneous and arises from the fact that metastases in the spleen are infrequently encountered in the spleen in general surveys. They review the usual explanations for this paucity of splenic metastases and find objections to them all. Noting that splenic metastases are not present unless there is widespread dissemination of tumors they reviewed 30 such cases and found a higher incidence of splenic metastases than pancreatic metastases. They conclude that the low incidence of splenic metastases as compared with lymph nodes, liver and lungs is due to the inequality of exposure to them.

Laennec Cirrhosis: Its Histogenesis with special reference to the role of Angiogenesis. Moschowitz, C., Arch. Path. 45: 178-215, 1948.

The histogenesis of Laennec Cirrhosis was studied from the biologic point of view with the aid of serial sections. The first change noted was that of a fatty liver. The precise mechanisms of the production of the fatty liver is not clear but it is felt that all cases of fatty liver if given sufficient time and the continuance of the factors producing it will eventually become transformed into Laennec cirrhosis. Following the fatty change an inflammatory reaction consisting of round cells, monocytes, plasma cells and a few polymorphs occurs in the periportal spaces. The succeeding phase is productive and is represented by a fibroblastic transformation. These inflammatory cells produce a capillary net-work and the tissue now resembles aseptic cellular granulation tissue. These

vessels increase in size and form the main blood supply to the fibrous and granulomatous strands. They arise from the portal vein and do not form any connection with the hepatic artery. Some of the vessels unite with hepatic veins forming bivenous strands and partially converts the blood supply into what amounts to an Eck fistula. This distribution forms the typical pattern in Laennec cirrhosis and accounts for the eccentricity of the central vein, the periportal distribution of the fibrosis, the distorted lobular pattern and the inclusion of the hepatic vein within the strains of connective tissue. In this interpretation the connective tissue structure is the result of the multipotential properties of the cells of the adult mesenchyme and not the direct result of necrosis of liver cells.

In addition to the vascular changes the formation of bile canaliculi was also noted.

Splenomegaly, Symmers, D., Arch. Path. 45: 385-409, 1948.

A review of splenomegaly with a classification which is in some respects different from the usual one is given.

The condition is discussed under the following groups:

1. **Infective and Parasitic Splenomegalies**—Acute splenitis (Acute splenic tumor) Tuberculosis, Boeck's Sarcoid, Syphilis, Kala azar, Visceral leischmaniasis, Posos, Malaria, Schistosomiasis.

2. **Splenomegalies of Circulatory Origin** — Chronic passive congestion, Speckled spleen.

3. **Mechanical Splenomegaly** — Polycythemia vera.

4. **Metabolic Splenomegalies**—Gaucher's disease, Niemann-Picks disease, Letterer-Siwe disease, Hand-Schulier-Christian disease, Primary Xanthomatosis, Amyloidosis including Still's disease.

5. **Blood Dyscrasias**—Lymphoid, Myeloid and Eosinophilic (Myeloid) Leukemias, Congenital hemolytic icterus, Idiopathic thrombopenic purpura, Pernicious anemia.

6. **Splenomegalies of Unknown Nature**—Giant follicle lymphadenopathy, Hodgkin's disease, Briquet's gastro intestinal pseudoleukemia, Banti's disease. Agnogenic Myeloid metaplasia.

7. **Neoplastic and Cystic Splenomegalies**—Noncancerous tumors, Spindle cell sarcoma, Lymphosarcoma, Kaposi's sarcoma, Reticuloendotheliosis, Metastatic tumors, Traumatic cysts, Parasitic cysts.

Testicular Tumors, Seminoma and Teratoma—Scully, R. E., and Parham, A. R., Arch. Path. 45: 581-607, 1949.

Testicular Tumors are classified under (1) Seminoma, (2) Teratoma, (3) Interstitial cell tumor and (4) Miscellaneous group. The seminomas and teratomas are discussed.

The seminoma forms a circumscribed firm nodular mass which replaces all or most of the testis. The cut surface bulges as a homogenous grey mass. Histologically it consists of clear polyhedral cells. The stroma is scanty but shows a varying degree of lymphoid infiltration. The Ascheim-Zondeck and Friedman tests are negative but the urine contains increased amounts of Follicle stimulating hormone which probably originates in the pituitary. This tumor constitutes about half of the testicular tumor seen. The age incidence is maximal in the fourth decade and some authors have noted a higher incidence in undescended testis. The usual presenting symptom is testicular enlargement while pain is uncommon. The usual metastasis are to the regional lymph nodes but the incidence is controversial. Friedman and Moore noted metastases in 10% in cases followed for one year. Others have reported higher rates. The tumor is radiosensitive.

The histologically malignant teratoma consists of a firm mass replacing the testis. The cut surface bulges as a soft friable multicolored mass the gray of the tumor mottled red or brown by hemorrhage, yellow by necrosis and white by collagen. Microscopically the tumor is a mixture of teratoma and cancerous neoplastic tissue. There is frequently a striking variation from one tumor to another and from one area to another. The cells are usually large and clear but may be small and anaplastic. Areas of seminoma are commonly present. Chorion carcinoma is a sub-group. Large amounts of gonadotropic hormone are excreted and the Ascheim Zondek and Friedman tests are frequently positive. The tumor accounts for about 40% of testicular tumors. Testicular enlargement is the usual presenting symptom and pain is common. Early metastasis are common and as the tumors are radioresistant the prognosis is poor.

Histologically benign teratomas fall into three ill defined groups, organized, unorganized and simplified teratomas, none of which contain histologically cancerous elements. In organized teratomas rudimentary organs are formed. In unorganized teratoma neoplastic structures from bidermal or tidermal origin appear in disorderly arrangement. In cases that metastasize the metastases may show the structure of histologically cancerous teratoma. The endocrine aspects of this group have not been worked out. They constitute about 5% of testicular tumors. Knowledge is limited but they are regarded as slow growing. When metastases occur they are said to be radioresistant.

Cicatrizing Enteritis (Regional Ileitis) as a Pathologic Entity: Analysis of One Hundred and Twenty cases. Warren, S., and Sommers, S. C., Am. J. Path. 24: 457-489, 1948.

120 cases of Cicatrizing Enteritis (Regional Ileitis) are reviewed and the conclusion drawn that the condition is acceptable as a pathologic entity. Historical aspects and general features of the condition are discussed. The clinical and pathological features of the disease are divided into three: acute, subacute and chronic phases, and discussed in turn. A word is said about differential diagnosis and finally pathogenesis is discussed.

Biliary Xanthomatosis (Xanthomatous Biliary Cirrhosis), MacMahon, H. E., Am. J. Path. 24: 527-532, 1948.

Four patients who had been diagnosed as Xanthomatous Biliary Cirrhosis using the criteria set out by Thannhauser and Magendantz in 1938 were studied. These were studied by biopsy and two of these cases came to autopsy. The criteria for diagnosis were jaundice for months, an enlarged and palpable liver, cholesterol level of blood above normal and xanthomatous changes on the hands and body. None of the biopsies showed xanthoma cells in the walls of the biliary tracts and none of the autopsies showed deposits of cholesterol in the gall bladder or biliary tracts. A chronic inflammatory reaction was found in the interstitial portal areas which appeared to begin as a chronic pericholangiolitis and spread into the peripheral zones of the adjacent lobules. It was concluded that this condition which is found almost exclusively in females of about 40 years of age is a liver disease and not a primary disease of cholesterol metabolism.

Melanomas in Childhood, Spitz, S., Am. J. Path. 24: 591-602, 1948.

Thirteen cases of juvenile melanomas were studied. Only one had a clinically malignant and fatal course despite the similarity of the juvenile lesions to the malignant melanoma of adults. Giant cells occur in about half the cases of juvenile melanomas but seldom occur in adults. There is a precipitous rise in the capacity of melanomas to metastasize after puberty, despite the histologic similarity to the usually non-metastasizing juvenile melanoma. The possibility of sex hormones activating the melanoma at the time of puberty is suggested. Conservative rather than radical surgery is indicated for these juvenile lesions.

Dr. J. R. W. Nicholson . . . An Appreciation

DR. J. R. W. NICHOLSON died early in his 70th year on June 3rd, 1949, about two years after an operation on his eye for melanoma. His patients and friends felt his death as a personal bereavement. To his medical confreres his death caused poignant regret, for they, perhaps more than any others, know that his character was of sterling quality.

A tradition of north of England breeding, as one of a large family, pioneering near Dauphin, education at the expense of his own farm labour, doctor to construction forces on the Hudson's Bay Railroad, war service as internist to the D. V. A., is a simple catalogue of his activities.

Throughout all these years the human metal was the same. It was not necessary to look for the "Hall Mark" as a guarantee of his quality. His sturdy independence amongst school comrades, and farm hands, his intelligent and faithful care of the railway navvies, and of the soldiers overseas and veterans of two wars at home, the faith and affection of his private patients, and the serenity of his married life after his marriage to Miss Bertha Muriel Hare in 1916 did not wear through to a plated base. His was solid worth; the values of a natural Christian.

F. A. Y.

LABORATORY NOTES

Reported by Miriam Wiseman, B.Sc., M.T. (A.S.C.P.), R.T. (Can.)

Bile Pigments in Stool and Urine

Lois Kelpin, B.A. (Biol.) R.T.

The bile pigments of the normal bile are biliverdin and bilirubin. The former gives a green color to the bile and is common in animal biles while the latter gives a yellow color and that is found in humans.

Bile pigments result from the breakdown of the Hemoglobin in the red blood cells, which occurs chiefly in the liver, but to some extent also in the spleen and other tissues (e.g. after a bruise causes the accumulation of the blood in the tissues, hence the changes in color of the bruise as it gets older). Biliverdin is the oxidation product of the bilirubin and in the intestines through the reducing action of bacteria, it is changed to urobilin and then to urobilinogen. Stercobilin is similar to urobilin (but not identical). It, too, is formed by bacterial action on bilirubin and with the urobilin is responsible for the brown color of the feces.

Thus we have the two main pigments—bilirubin and urobilin. If there is a reduction of the liver function, some may appear in the urine, they may also appear when the protein metabolism is increased as in fevers. The fecal pigments of the normal adult are urobilin and stercobilin. Neither bilirubin nor biliverdin occurs normally in the fecal discharge of adults, although the former may appear in the excrement of nursing infants. If these pigments are found in the feces of adults, they indicate an abnormally rapid transit through the large bowel thus preventing their transformation into urobilin. Sometimes colorless urobilinogen may be formed which on exposure to air changes to urobilin thus darkening the color of the feces. Drugs and foods are also responsible for the color of the feces. The one you may have trouble with is the green stool which follows the administration of calomel. This color is generally believed due to biliverdin but von Jaksch claims this view is incorrect since he has been able to detect hydrobilirubin but no biliverdin in the stools after the administration of calomel. In cases of biliary obstruction (e.g. obstructive jaundice) a grayish white acholic stool is formed. Urobilinogen is normally found in urine. Bile is found most frequently in urine as the result of Infectious Hepatitis. Indeed the appearance of bile in urine is one of the earliest symptoms.

The methods of testing for the pigments are as follows:

A. Bile Pigment in Urine (bilirubin and biliverdin)

This is a modification of Harrison's test by Hawkinson, Watkins and Turner. It is especially suited for mass or serial usage.

Preparation

Special filter paper must be used—Schleicher and Schull No. 470. (I have not found any other type that is satisfactory). Thoroughly impregnate the filter paper with a saturated solution (aequeous) of Barium Chloride (about 35 gm of Barium Chloride in 100 cc of water). It makes no difference to the test how long the papers are left in the Barium Chloride solution as long as they are thoroughly saturated. Dry in the air, or better still, in a hot air oven. Cut into strips, 8" x ½".

Store in a glass jar.

Fouchet's Reagent.

Ferric Chloride	9 gm.
Trichloracetic Acid	25 gm.
Water (Dist.)	100 cc.

This Solution keeps very well.

Procedure

Pour some of the urine specimen into a regular 6" x ½" test tube. Stand a filter paper strip in it for from thirty seconds to 2 minutes. Remove strip and lay on a paper towel. At the point on the filter paper strip where the surface of the urine was (usually there will be more intense color at this point) add 2 to 3 drops of Fouchet's reagent.

A positive reaction is the appearance of a green color varying in intensity with the amount of bilirubin present. With smaller amounts the color is often detected as a faint green line running across the strip.

In a negative reaction there is no color change.

If urobilinogen is present in increased amounts it sometimes gives a cherry red color. This is not specific however.

B. Urobilinogen in Urine

Bilirubin and biliverdin must be removed from the urine before a test for urobilinogen is done. A simple presumptive test for significant amounts of bile pigments is the foam test. Urine is shaken and if the foam on top has a yellow tinge, bile pigments are present. Bile pigments are removed by precipitating them as insoluble chlorides as follows:

Add 2 cc. of a 10% aequeous solution of Calcium Chloride or Barium Chloride to 8 cc. of urine in a centrifuge tube. Mix well. Centrifuge. Decant supernatant fluid.

N.B. The test for urobilinogen must be performed as soon as possible after the urine is passed as exposure to light changes the urobilinogen back to urobilin.

Preparation

Ehrlich's Reagent.

Water (Dist.)	80 cc.
Hydrochloric Acid (Conc.)	20 cc.
Paradimethyaminobenzaldehyde	2 g.

Procedure

To 5 cc. of urine add 0.5 cc. of Ehrlich's Reagent. Allow to stand at room temperature for 3 min. If a deep cherry red color develops, proceed to make dilutions of the urine, 1:5, 1:10, 1:20, etc. Repeat the test on each of these dilutions.

Record the dilution in which the last trace of color can be seen. As the color change decreases it is best to hold the tube at a slight slant above a piece of white paper and look straight down into it. At the same time compare with a control tube of the same dilution but lacking the Ehrlich's reagent. The cherry red color will appear in the denser shades around the edges of the tube. Normally there is a positive reaction up to a urine dilution of 1:20.

C. Bile Pigments in Stool

Modification of Huppert's Test.

Preparation

Milk of Lime.

Calcium Chloride	0.15 g.
Water (Dist.)	100 cc.

Sodium Nitrite Solution.

Sodium Nitrite	1 g.
Water (Dist.)	100 cc.
Ethyl Alcohol	95%

Sulfuric Acid Conc.

Procedure

Emulsify the stool with distilled water in a medicine glass so that the mixture is about 33% stool. Pour this into a test tube straining through two layers of cheese cloth as you pour. Add an equal volume of milk of lime. Mix thoroughly with an applicator stick. Allow to stand for 5 minutes. Transfer to 2 centrifuge tubes. Centrifuge for 15 minutes at 1750 r.p.m. Pour off the supernatant fluid.

Prepare your alcoholic solution:

Ethyl alcohol	5 cc.
Sulfuric Acid (conc.)	2 drops

Add this to one centrifuge tube.

Mix the precipitate and the alcohol solution thoroughly by means of an applicator stick.

Place the centrifuge tube in a water bath and allow to boil for one minute. (N.B. be sure that the solution inside the tube boils).

Remove from water bath. Immediately add two drops of the Sodium Nitrite solution.

The immediate appearance of a blue green color is a positive reaction for bile pigments. This color immediately changes to black or grayish brown, therefore you must be careful to observe the color produced immediately on the addition of the Sodium Nitrite solution.

Treat the other centrifuge tube in the same manner except that it is boiled for 2 minutes.

If either one of the tubes develops the proper color the specimen contains bile.

D. Urobilinogen in Stool

Schmidt's Qualitative Test — Dr. Lederman's modification.

Preparation

Prepare an aqueous saturated solution of Mercuric Chloride.

Procedure

In an evaporating dish or small beaker rub up a small portion of the feces, about the size of an almond (from the inside of the mass) with about twice its volume of Mercuric Chloride solution. Be sure the feces are covered.

Heat the mixture on top of a boiling water bath for ten minutes, at the end of this time a deep cherry color developed in the particles of feces is positive for urobilinogen.

References

Kolmer and Boerner — Approved Laboratory Technique.
Hawk and Bergeim — Practical Physiological Chemistry.
Nicholsons — Laboratory Medicine.

Sanborn Appoints X-ray and Radium

The Sanborn Company of Cambridge, Mass., announces that effective June 1st, 1949, all distribution and servicing of their line of equipment will be handled exclusively in Canada by the Canada-wide offices of X-Ray and Radium Industries Limited, Head Office in Toronto.

X-Ray and Radium Industries Limited advise that they are forwarding literature, upon request, on any of the units manufactured by the Sanborn Company. They are now soliciting inquiries for these units.

Canadian doctors are already familiar with such Sanborn units as the Sanborn Metabulator, the Sanborn Viso-Cardiette and the Sanborn Instomatic Cardiette. It is the opinion of the Sanborn Company that these and their other instruments for use in the metabulator and cardiographic fields have been perfected to a very high degree. Revolutionary developments achieved during the war years opened a wide field of accomplishment to the manufacturer and many new discoveries are incorporated in the present day equipment.

EDITORIAL

J. C. Hossack, M.D., C.M. (Man.), Editor

The Dean

Our College has been fortunate in its Deans. So far only five men have occupied that position but all have laboured tirelessly and vigorously to place and maintain our School in the forefront of medical colleges. How difficult the task has been at times only those men themselves could know; but that there were difficulties we can be certain and that these were overcome is evident.

Again there comes a change. Dean Mathers who for 17 years has guided our educational affairs is dean no longer. The School has grown in size, and in stature during his reign. Much of its present prestige it owes to him and exactly how much it owes no one can say, so great have been the changes and improvements during the period of his Deanship. The honours that have been literally showered upon him are proof of the esteem in which he is held, not only by his colleagues and his University but by the profession throughout the Dominion. Unlike his predecessors who went into complete retirement on completing their period of service, Dr. Mathers will still carry on as a teacher, and will, no doubt, like an Elder Statesman stand ready to help his successor who now assumes his mantle and his burden.

The selection of Lennox Bell as the new Dean was an obvious choice. To natural abilities of a high order he has added an excellent training and a wide experience. He is young enough to see visions and old enough, perhaps, to have dreams concerning his Alma Mater. A very great asset is his popularity with the students, for a strong bond of sympathy between the head of the College and the student body is essential if each student is to do his best; for the Dean is not only the head of the Faculty but should be an easy accessible and understanding pater familias to the students. In this respect he is like, and has the example of, his father whom all of us who knew him still remember as a very kindly gentleman. Far better than any stranger could do the new Dean understands the problems of our school and, having himself studied here, he naturally has a greater and more personal interest in the school's future than a stranger could have. Moreover he does not have to seek the goodwill of the faculty, the profession or the students. These he already has and all three bodies wish him well in his new task.

Hospital Beds

Elsewhere you will find an Editorial by Dr. G. S. Fahrni for the American Journal of Surgery. In it he asks why so many hospitals have so few available beds and then proceeds to answer in part his own questions. He gives many reasons for the present state of affairs and with his reasons all of us must agree. Modern General Hospitals have been planned to care for the acutely ill whose stay is not long but, at present, these hospitals are housing very many people—they can scarcely be called patients—who are in for procedures that should be done outside of hospital. A patient under the M.H.S. can get free diathermy, X-ray treatment, etc., if he is in hospital and so he goes (or is sent) to hospital where, except for a short time each day, he conducts himself as if he were at home. Then again excessively leisurely investigation followed by unnecessarily prolonged convalescence withholds a number of beds from those who really need them.

There should be separate places for convalescence and there is an urgent need for separate institutions for the care of the chronically ill and, indeed, for those who merely need diagnostic services. But a very great deal could be done to make beds more easily available. Hospitals have become too attractive now that so many are members of the M.H.S. Again the abnormal craving of ailing laymen to "go through the mill" or "get the works" or "have the book thrown at them" means that many demand hospitalization even if they themselves must foot the bill. And no little blame attaches to the doctors who naturally prefer to eliminate house calls when they can do so by keeping their patients in hospital.

Dr. Fahrni desires the establishment of convalescent centres where patients could go after the acute phase of their illness was over and I am sure we all agree with him. But what about the M.H.S. people? They have paid for their bed and naturally want to lie in it. And the doctor, realizing how much outside care is likely to cost, naturally wishes to save his patient's purse and so, if a valid excuse is at hand, the patient gets his bed.

The M.H.S. has undoubtedly been responsible for filling many beds that would otherwise be empty. The M.M.S. on the other hand tends to restrict hospitalization to those who need it. The more one thinks about the matter the more desirable becomes the idea of universal coverage by the M.M.S. Then those who merely require tests or treatments could get these outside without paying the costs which they now must pay.

But, for the present, a good deal could be done if patients were kept in hospital for only so long as hospital care is really necessary; and if only such patients were hospitalized as urgently need that care.

ASSOCIATION PAGE

Reported by M. T. Macfarland, M.D.

Association Sections

Recent negotiations concerning fees have brought out the fact that some specialist groups are organized with affiliation on the local level in conjunction with the district society, and some on the national level, but that only two have been affiliated on the provincial level. This matter is now being discussed with a view to having sections affiliated on the provincial level in order that appropriate reference may be made from time to time on matters of policy, fees, etc.

Legislation

During the last session of the Provincial Legislature several bills were presented which are of interest to the medical profession.

Bill 9—An Act to validate the establishment of Beausejour Hospital District No. 29 and certain proceedings taken by the municipalities concerned in connection therewith.

Bill 14—An Act to amend the Child Welfare Act.

Bill 19—An Act to amend the Medical Act—providing for the remuneration of Council members.

Bill 22—An Act to amend the Public Health Act.

Bill 33—An Act to provide Special Assistance for Old Age and Blind Pensioners.

Bill 39—An Act to amend the Vital Statistics Act.

Bill 41—An Act to authorize the establishment of certain Medical Nursing Unit Districts and to validate certain proceedings taken in connection therewith. (Baldur, Erickson, St. Pierre).

Bill 48—An Act to amend the Health Services Act—provision among other matters:

(a) respecting the expenses of the boards of Local Health Units;

(b) respecting the establishment of Diagnostic Facilities where there is no Local Health Unit;

(c) respecting the making of grants to Outpost Hospitals.

Bill 55—An Act to incorporate "Winnipeg Clinic."

Bill 61—An Act to provide for the Granting of Aid to Municipalities for Social Assistance, defined to include

(i) maintenance provided by a municipality under The Child Welfare Act through the agency of a children's aid society or the Director of Public Welfare; or

(ii) direct aid to an indigent person by way of

(a) food,

(b) clothing,

(c) shelter, fuel, light, or water,

(d) medical, dental and optical, care or any of them, including prescriptions and supplies for any of those purposes;

(iii) the burial of an indigent person by or at the expense of a municipality.

Bill 68—An Act respecting Pine Falls Hospital—to authorize the making of grants from the Consolidated Fund for the purpose of operating Pine Falls Hospital.

Bill 86—An Act to amend the Cancer Relief Act—to provide for the making of advances from the Consolidated Fund to the Cancer Relief and Research Institute for the purpose of providing working capital for furthering the objectives of the Institute.

Bill 87—An Act to amend the Mental Diseases Act.

Bill 88—An Act to amend the Lunacy Act.

Bill 90—An Act to amend the Basic Science Act—to remove the practice of Dentistry from the application of the Act.

Bill 104—An Act to amend the Hospital Aid Act—to make further provision respecting the aid to be granted to hospitals under that Act.

On February 24th, 1949, a special committee, consisting of Hon. Mr. Schultz, Messrs. Harrison, Olive, Scraba, Stinson, Turner and the mover of the amendment (Mr. Stringer), was appointed to inquire into and investigate the manufacture in whole or in part of, and the sale and distribution of, optical goods in the Province of Manitoba and the **rendering of professional services in connection therewith**, and all matters and things appertaining thereto. Mr. Stringer was appointed chairman of the committee on organization and the quorum was fixed at four members.

On March 23rd, 1949, Hon. Mr. Schultz presented to the Legislature the Report of the Royal Commission, appointed by Order-in-Council on the 30th day of April, 1947, in reference to costs of Hospitalization, together with Report of Consulting Accountant to the Commission.

On March 25th, 1949, Hon. Mr. Schultz presented a Return to an Order of the House on motion of Mr. Stinson, showing:

1. How many government employees come under the jurisdiction of the Department of Health?

2. How many cars are operated by this Department?

3. How many boards and advisory committees come under the jurisdiction of the Minister of Health and Public Welfare?

4. How many Acts are administered by the Minister of Health and Public Welfare?

5. How many new Acts concerning Health and Public Welfare were passed during the past five years?

6. How many amendments to Acts concerning Health and Public Welfare were passed during the past five years?

COLLEGE OF PHYSICIANS AND SURGEONS OF MANITOBA

M. T. Macfarland, M.D., Registrar

(Continued From June, 1949, Issue)

C. The rent of the combined business office was increased from $111.83 to $123.00 in May, 1948; the business tax, based on office rent, was also raised; and a 10% cost of living bonus was given to the staff on November 1, 1948. The C.P. & S. were requested to increase the amount of their monthly cheque to cover their share of these expenses.

D. The matter of the C.P. & S. Notice of Motion re increase of annual fees to $5.00 was discussed by the Liaison Committee, and support of the M.M.A. assured. There has been criticism by some members of the profession in the Province of the amount of money the C.P. & S. has invested, and considered the C.P. & S. should take over a larger share in financing the activities of the medical men.

Dr. Best suggested that the Council should appoint a committee to give careful study to the funds of the C.P. & S. and prepare a statement explaining in detail what the C.P. & S. is doing with the money.

E. Dr. R. W. Richardson suggested that a careful study should be given to the present Medical Act by a committee struck by the C.P. & S. and M.M.A. He stated that the profession may be open for criticism at any time, and that the government may ask for proposals. He thought that a committee should give careful consideration to suggestions, and have down on paper all changes thought advisable.

F. The Medical Arts Building Limited is now charging $10.00 for night meetings, and $15.00 for Sunday meetings, held in the Medical Arts Club Rooms. The Liaison Committee felt that the charge was unjustified, for the reason that the M.M.A. and C.P. & S. meetings are held for the good of the medical profession as a whole, and thought that the C.P. & S. should protest.

Dr. Macfarland stated that the Manitoba Medical Association sent a letter of protest to the Medical Arts Building Limited, and had heard verbally that the charge is to continue. It was felt that no further action is necessary.

Motion: "THAT the report of the Liaison Committee be accepted." Carried.

Dr. Macfarland stated that at the October meeting of Council, no appointment was made to replace Dr. W. S. Peters, resigned, on the Liaison Committee. Dr. Best requested Dr. C. B. Stewart to attend, ex-officio, until the May meeting of Council, when a permanent appointment could be made.

Motion: "THAT the cost of the adding machine be shared equally, and that the proportion of the recording machine be determined by the Liaison Committee." Carried.

Motion: "THAT the monthly amount paid by the College of Physicians and Surgeons to the Manitoba Medical Association be increased to Two Hundred Dollars ($200.00), from January 1, 1949." Carried.

3. Communication From Manitoba Cancer Relief and Research Institute

The Registrar read a communication, under date November 24, 1948, from the Executive Director of the Cancer Relief and Research Institute, requesting a copy of resolution passed by the C.P. & S. Council, two or three years ago, recommending that the Cancer Relief and Research Institute should exercise authority over the use of radium in the Province of Manitoba.

Under date November 25, 1948, a reply was sent to Dr. Macdonald explaining that the resolution was part of a larger one passed May 15, 1946, and addressed to the Department of National Health and Welfare in connection with the activities of "Radium Luminous Industries Limited."

No further request for clarification has been received from Dr. Macdonald, and the correspondence was ordered filed.

4. Communication From the Manitoba Association of Registered Nurses

The following letter, dated November 2, 1948, from the Executive Secretary of the Manitoba Association of Registered Nurses was presented to the Committee:

"Any advice which you may give regarding the following question will be very much appreciated for purposes of information.

"It is my understanding that in June, 1941, the attached Resolution was approved by representatives of the Canadian Nurses' Association and the Canadian Hospital Council in joint conference. I believe that thereafter the Canadian Medical Association was asked to make a decision regarding a list of procedures which could be performed by Registered Nurses who would be carefully selected and trained for such work, and that again in July last this request was placed before the Canadian Medical Association for some definite instruction in this regard. Late in July, 1948, the General Secretary of the Canadian Nurses' Association advised me that the Executive Council of the Canadian Medical Association did not wish to accept the responsibility for a decision in this matter and had referred it to the Registrars of the College of Physicians and Surgeons of each province.

"In as much as this office is expected by nurses and by the public to possess authoritative informa-

tion regarding all aspects of nursing practice, I would very much appreciate your advice as to the attitude and decisions of the College of Physicians and Surgeons in Manitoba in respect to the foregoing matter."

"Resolution Approved by Representatives of the Canadian Nurses' Association and the Canadian Hospital Council at a Joint Conference held in June, 1941:

'WHEREAS the changing nature of hospital practice has necessitated the greater use of clinical and technical procedures in the treatment of various conditions, and

WHEREAS over 90 per cent of our hospitals do not have interns and many of those normally employing interns are having increasing difficulty in obtaining an adequate number of interns,

THEREFORE BE IT RESOLVED, that this Joint Conference of representatives of the Canadian Nurses' Association and the Canadian Hospital Council, convened to discuss this question, reaffirms the principle already endorsed by the Canadian Hospital Council, and by the Nursing Education Committee of the Canadian Nurses' Association, to wit, that in those hospitals unable to obtain adequate intern service, it should be considered sound procedure for hospitals to permit the following to be performed by nurses, provided such be done by one or more graduate registered nurses on the hospital staff carefully selected and trained for this work:

Blood pressure readings;

Subcutaneous injections;

Intravenous injection of saline and glucose solutions and such other medications or diagnostic fluids as the medical staff may authorize;

Taking of Wassermans;

Removal of sutures;

Intra-muscular injection of substances specifically authorized by the medical staff;

Recording of histories (with the exception of the physical examination);

Progress notes as dictated by the physician in charge;

Such other clinical procedures as may be recommended by the medical staff and approved by the director of nursing and the board of trustees.

FURTHERMORE BE IT RESOLVED, that before instituting any part or all of the above outlined arrangement, such be approved by the organized medical staff, by the director of nursing and the governing body of the hospital'."

The Committee were of the opinion that all of the procedures outlined in the motion of the Joint Conference of the C.N.A. and the C.H.C. could be performed by graduate registered nurses, and referred the matter to Council.

5. Reciprocity With the Michigan State Board of Registration in Medicine

A communication dated November 24, 1948, was presented from the Secretary of the Michigan State Board of Registration in Medicine, advising that the citizenship requirement has been deleted from the Rules and Regulations of all State Boards and Commission, and inquiring whether the College of Physicians and Surgeons of Manitoba would consider entering into a reciprocal agreement with the Michigan State Board.

The Committee considered it a worthwhile suggestion, and referred the matter to Council. It was suggested that the Michigan State Board be advised that the Basic Sciences Certificate of Credit is a necessary prerequisite for licensure.

6. Foreign Graduates

The motion of the Registration Committee, at a meeting on December 13, 1948, was presented to the Committee. The Registrar reported that no reply had been received from the President of the University of Manitoba, or the Dean of the Medical Faculty. He stated that it would be necessary to set up extensive and elaborate system for evaluating the foreign documents, but no definite action has been taken. He stated further that he had written to Associate Director, Rockefeller Foundation, Paris, France, but had as yet received no reply. He advised that several of the European doctors had been employed by hospitals and institutions, without being registered.

Motion: "THAT the recommendation of the Registration Committee be passed for approval to Council." Carried.

7. Requests for Refund of Registration Fee

The Registrar stated that two doctors have registered, never practised in Manitoba, have now left the Province, and are requesting refund of their registration fee.

Motion: "THAT the Registrar request Dr. . . . . and Dr. . . . . to return their Registration Certificates, and that they be refunded the amount of Ninety Dollars ($90.00) each." Carried.

8. Canadian Association of Medical Students and Internes

A letter dated December 14, 1948, from the Canadian Association of Medical Students and Internes was presented to the Committee. The letter stated that in addition to summer internships and appointments with practising physicians for summer experience, they wished to open up some job sources along the lines of laboratory appointments, and more specific duties not requiring clinical experience. The Registrar replied, under date of December 30, 1948, advising that he would give the project some publicity in the February issue of the Manitoba Medical Review.

9. Change of Name

An application was presented from Dr. . . . . to have his name changed on the records of the College from . . . . A certified copy of the Certificate of Change of Name was also presented.

The Registrar was instructed to make the necessary changes in the records of the College.

10. Registrar's Meeting

A letter dated December 28, 1948, was presented from the Registrar, C.P. & S., Saskatchewan, advising that the meeting of the Registrars will be held June 16, 1949, in the Bessborough Hotel, Saskatoon. He requested subjects to be included on the agenda. It was referred to the Council meeting.

11. Re . . . .

The Registrar presented a letter from the Department of Health and Public Welfare, enclosing from the Attorney-General's Department, the report of the City Police who investigated the complaint regarding . . . . The report was ordered to be filed.

12. Discipline Committee

The Registrar reported that Dr. C. B. Stewart had been appointed to the Discipline Committee at the October meeting of Council. As President, he is ex-officio, a member of all committees. The Committee considered that Dr. Stewart should remain a member of the Discipline Committee until the May meeting of Council.

13. Date of May Council Meeting

Motion: "THAT the May meeting of Council be held to coincide with Convocation of the University of Manitoba." Carried.

The meeting adjourned.

(Continued in Next Issue)

Hospital Beds, Where Have They Gone?*

Gordon S. Fahrni, M.D.

The paucity of hospital beds, in spite of the demand for them, has been growing rapidly. In many communities it already has reached a level that adversely affects the practice of good medicine. Should it continue to gather momentum, as in the past few years, it threatens to cripple seriously our objective of adequate care of the sick. In the practice of surgery this situation is particularly disturbing, perhaps more so than in the medical branches of the profession.

Let us try to assess the factors and events which have led to this state of affairs, going back some thirty-five years when most people feared the hospital and would enter one only under the compulsion of a serious illness which demanded specialized hospital care. Up to that time most medical conditions, confinements and lesser surgical procedures were taken care of in the home.

The impact of World War I upon us together with advances in medical science had a salutary effect in popularizing hospitals both with the people and the medical profession. The former realized the need for specialized care obtainable most easily in the hospital and the latter found the hospital the most ready answer to their need of special equipment and services to meet the challenge of the day.

This, perhaps, was as it should be in raising the standard of medical care and applying efficiently the newer things in medicine. A few of the outstanding of these are liver in pernicious anemia, insulin in diabetes, heparin and dicumarol in thrombosis and then the great attack on tuberculosis, with an upward spiralling of the number of hospital beds all over the country. In the thirties the sulfonamides came and a little later, penicillin, to mention only a few of the newer aids in medicine which require greater hospital facilities. Added to these, the possibilities of surgical treatment have been growing steadily, covering an ever increasing field and requiring more and more special equipment and specialized technic much of it applicable only in the well equipped hospital.

World War II gave great impetus to our knowledge of much that we did not know before and has been the direct cause of a big increase in hospital beds and services in the United States and Canada.

Until ten years ago the situation seemed to be well in hand but for a few years before this, beginning with the depression in the early thirties, people gradually became more dissatisfied and political unrest was fostered by unemployment and poverty in the homes of many. Government agencies were set up to meet this catastrophe and gradually many of our people began to look upon this assistance as a right rather than as a privilege. The spark of socialization of medicine was thus fanned and an ever increasing body of opinion grew up to the effect that the state should shoulder more and more of the cost of maintenance of the health of the people. Political parties and agencies had to meet this changing order and were encouraged in their actions by the example set by countries across the seas.

Voluntary contributory insurance agencies grew up, some offering hospitalization and some health insurance. The Blue Cross extended its influence and in Canada we have two provincial governments giving free hospitalization to all its people.

This socialization of hospitalization and medical care accounts for the overcrowding of our hospitals

*Editorial Reprinted from the April, 1949 issue of The American Journal of Surgeons.

more than any other factor. The situation is already serious but should a complete health and hospital coverage be given to all the people either by the government or by health insurance agencies, a still greater demand for hospital beds and services would soon develop.

It is easy to understand the attitude of the insured person who becomes ill with perhaps a trivial ailment which could well be taken care of in his home. He is entitled to free hospitalization; indeed he has been told so. Why stay at home with some added incidental expense? Why put the family out by the added duties entailed in his care? In this the physician may encourage him in that all facilities are readily available in the hospital and in addition he finds it much easier to attend a number of patients under one roof than in their respective homes.

Should it not be possible to have a minimal standard of disease under which no patient would be admitted to a hospital equipped for the handling of the more serious problems in medicine and surgery? The answer to the shortage of hospital beds which we most commonly hear is—build more hospitals! These cost a lot of money, are expensive to maintain and there is a limit to what the country can stand economically.

I think I can assert confidently that if a competent and neutral group of doctors were to assess the patients in an average general hospital at any time, perhaps 25 to 40 per cent could go home or be sent to a convalescent hospital, provided such were available, with reasonably competent management and supervision. The capital outlay in a convalescent hospital is much less than that of a general hospital and the maintenance cost per bed is infinitely less. The costly, highly trained personnel and specialized departments of hospitals would then be used more fully for the diagnosis and cure of disabilities for which they are designed.

Is not the time ripe for hospital boards, government agencies (who must supply the funds) and the medical profession to canvass this situation in the hope that convalescent homes or convalescent hospitals may be built or developed and operated in co-operation with hospitals? The needs of the sick thus may be met without lowering the standard of medical and surgical care to which they are entitled and the costs may be kept down to a figure that might be considered economically sound.

We surgeons may well study our patients and routine in the light of the known shortage of beds in hospitals equipped for major surgery. It is not unusual to find people who have had such operations as cholecystectomy, gastric resection, herniorrhapy or other lesser procedures doing quite well postoperatively and still occupying a bed from two to three weeks after the operation. If convalescent hospitals were available, surely these active beds should be released much sooner for the needy on the waiting list, indeed, should not some go home sooner. Those of us who practice early postoperative ambulation have cut down the hospital days per patient significantly; but if convalescent beds were available, we could do a still better job.

OBITUARIES

Dr. John Robert Warburton Nicholson

Dr. John Robert Warburton Nicholson, long connected with the Department of Veterans' Affairs, died on June 3, at the age of 69, in the Winnipeg General Hospital.

Born at Carlisle, England, he came, with his parents in 1889 to the Dauphin area in Manitoba. He was educated at Wesley College, Winnipeg, and graduated in medicine from Manitoba Medical College in 1914. Two years later he joined the 12th Field Ambulance with the rank of captain. In August, 1916, his unit went to France as part of the Fourth Canadian Division. After service in France and Belgium he returned to Canada in 1917 serving until April, 1919. He then joined the 3rd Field Ambulance (non-permanent militia) and rose to be Lieut.-Colonel of the unit in 1923.

He helped to organize the Soldier's Civil Reestablishment in 1919 and served with the Department of Veterans' Affairs until the time of his death, as chief medical consultant. He took a keen interest in the welfare of the veterans of both wars.

His hobbies were golf, curling and nature study. He was a member of Fort Rouge United Church and of Prince Rupert Lodge A.F. and A.M.

He is survived by his widow, six brothers and one sister.

◆

Dr. Daniel Baldwin

Dr. Daniel Baldwin, aged 76, died May 17, at Benito, where he had practised since his graduation from Manitoba Medical College in 1907. Before entering medicine he taught school at Cypress River, Man. He is survived by his widow and two sons.

Winnipeg Medical Society—Notice Board

K. R. Trueman, *Vice-President*
B. Dyma, *Trustee*
T. E. Holland, *President*
William J. Boyd, *Treasurer*
Sam. A. Boyd, *Secretary*

Annual Meeting

The Annual Meeting was held in the Medical College on the 12th of May with Dr. R. A. MacPherson Chairman and Speaker.

Theatre "A" in the Medical College holds a special place among the loftier memories of our student days. Not every voice attained the necessary heights. Some of the thoughts were above our level. It was no triumph of architecture. But from our inaugural address by Dr. Bjornson when the upper rows were filled with senior students anxious to see whether or not we could take what they knew he could deliver, through the years when we attended to applaud those that received special awards, it gathered significance.

It was an unhappy day when it was divided. Then, in the ascendancy of the Anatomy Department, the Winnipeg Medical Society and the other functions were relegated to the inferior part.

This is an age of inactivity and high taxes, but we still must urge the need for a Medical Memorial Hall. What the hall commemorated might better not be defined. Only it should be a place that would lend dignity to our meetings and one in which agitators and planners would feel uncomfortable.

The Annual Meeting did not suffer these feelings of restriction.

Dr. K. R. Trueman reported seven regular meetings and two incidental ones and the meeting in the Winnipeg General Hospital Outpatient Department which attracted the record attendance. Reports from Dr. S. A. Boyd and Dr. W. F. Abbott indicated that the Society was on a solid financial basis.

Reports from the Special Sections, Anaesthesiology, Internal Medicine, Obstetrics and Gynecology, Ophthalmology, Paediatrics and Radiology were read. The Sections are now affiliated with Manitoba Medical Association Sections.

The Library Committee reported an increase in the use of all the facilities, but a disappointing response to the extension of the hours. An increase in the Winnipeg Medical Library Donation was recommended and the need for a Library Building was mentioned.

The report from the Benevolent Fund showed an increase in funds received and those dispersed. Representation to the Department of Internal Revenue at Ottawa has been favourably considered and subscribers are entitled to the income tax concessions applicable to charities.

Dr. Ross Mitchell gave a report from a Committee on Public Relations and brought in a motion requiring members who had medical information for publication in the Lay Press to obtain the approval of the Secretary of the Winnipeg Medical Society. Dr. O. G. Hague spoke against the motion feeling that individual initiative might be stifled. A large majority of the members voted for the motion which now stands. This subject was discussed at length at an Executive Meeting. A ruling on a paper to be given to a Law Society had been requested. A recent press report stated that the medical "Profession was split" on the subject of Vitamin E. Of course, the word split was inaccurately used, inferring a saggital section when there was no part of the brains of the profession on the enthusiastic side. However, this publicity served to emphasize the need for correlation of individual statements before a press release affecting all the members is given and the Executive asked Dr. Ross Mitchell for a motion.

A certificate of appreciation was given to the past president, Dr. C. E. Corrigan.

Honorary Life Memberships were presented to Dr. J. E. Tisdale, Dr. A. Gibson and Dr. J. C. Hossack.

Dr. MacPherson gave an illustrated lecture on the Development of the Use of Roentgen Rays. He showed photographs of Roentgen and of his laboratory. Roentgen was fifty, in 1895, when he gave his first paper on the New Radiation in Wurzburg. His laboratory was thought to look like that of Dr. J. Doupe, but tidier. The laboratory has been preserved as a museum and fortunately was not damaged by the war. Early photographs took twenty minutes or more to take and precautions against injury to the operator were neglected. The discovery was immediately taken up and within a year pictures had been successfully taken in England, the United States and Canada. Dr. MacPherson showed reproductions of some of the very early photographs and described the pioneer work in radiology in Manitoba. The paper was enthusiastically received.

As the meeting closed Dr. MacPherson welcomed the president elect, Dr. T. E. Holland.

L. R. C.

Committee Reports

Secretary's Report

To The President and Members of
The Winnipeg Medical Society:

The Winnipeg Medical Society has enjoyed a satisfactory year. This is specially so as far as the General Meetings of the members are concerned. The programmes have been of high quality and the large attendance at all meetings indicates the interest of the members at large in the presentations. There have been seven regular meetings, and two special meetings. A new departure was a meeting held in the Out-Patient Department of the General Hospital, in which a large number of clinical and laboratory demonstrations were presented by the members of the staff of that hospital. It is hoped that a similar meeting will be held in other hospitals from year to year.

The Executive Council of the Society has met regularly and the routine business of the Society has been carried on efficiently by the President, Dr. R. A. Macpherson, and his associates.

Respectfully submitted.

K. R. Trueman,
Secretary.

Treasurer's Report

To The President and Members of
The Winnipeg Medical Society:

Herewith certified financial statement from our auditors, Messrs. Thornton, Milne & Campbell.

All of which is respectfully submitted.

S. A. Boyd,
Treasurer.

16th May, 1949.

To the President and Members,
The Winnipeg Medical Society,
Winnipeg, Manitoba.

Dear Sirs:

We have audited the accounts of the Association for the year ended 15th May, 1949, and submit herewith the following relative financial statements:

EXHIBITS:
"A" Balance Sheet as at 15th May, 1949.
"B" Statement of Revenue and Expenditure for the year ended 15th May, 1949.

The operations for the year, as set forth in Exhibit "B," have resulted in an excess of Receipts over Disbursements of $1,661.28. Membership fees received are in accordance with duplicate receipts examined by us but are not subject to further verification. Expenditures have been sufficiently authorized and vouched.

In accordance with the Minutes of 17th November, 1948, and subject to the Minutes of 15th May, 1946, the sum of $500.00 has been placed in the Special Library Fund for the use of the Library Committee of the Faculty of Medicine. A statement of transactions affecting this account during the year is also shown in Exhibit "B."

We obtained from the Bank of Toronto verification of the bank balances, subject to allowances for outstanding cheques as shown by the books.

The Association's investments comprise the following issues of Dominion of Canada bonds:

Par Value		Cost	Market Value
$1,000.00	Dominion of Canada 3%, 1952,	$ 987.50	$1,004.50
1,000.00	Dominion of Canada 3%, 1957,	1,000.00	1,024.50
$2,000.00		$1,987.50	$2,029.00

These securities are lodged with the Bank of Toronto for safekeeping and are in accord with confirmation received from the Bank. All interest, on an accrued basis, has been duly accounted for on the books of the Association.

We would recommend that due consideration be given to the writing off of the accumulated cost of office furniture and equipment, as we are advised that certain items included therein will soon require replacement. Further, since no annual provision for depreciation is made, we would suggest that in the future the cost of any additions be written off when incurred.

To the best of our knowledge and belief, all liabilities applicable to the period under review have been recorded on the books.

In conclusion, we wish to express our appreciation of the courtesies extended to us during the course of our work.

Yours very truly,
THORNTON, MILNE & CAMPBELL,
Chartered Accountants.

Exhibit "A"

Balance Sheet
As at 15th May, 1949

ASSETS

Cash:		
On deposit with Bank of Toronto		$2,879.39
Investments—at Cost:	Par Value	
Dominion of Canada Bonds,		
3% 1952	$1,000.00	$ 987.50
3% 1957	1,000.00	1,000.00
		$1,987.50
Add: Accrued Interest thereon		15.00
		2,002.50
Office Furniture and Equipment—Book Value		267.04
		$5,148.93
Special Library Fund:		
Cash:		
On deposit with Bank of Toronto		706.76
		$5,855.69

LIABILITIES

Manitoba Medical Association		$ 37.50
Membership Fees Paid in Advance		5.00
Surplus:		
Balance as at 15th May, 1948	$3,945.13	
Less:		
Appropriated for Library Fund	500.00	
	$3,445.13	
Add:		
General Funds:		
Excess of Receipts over Disbursements	1,661.28	
		5,106.41
		$5,148.93
Special Library Fund Reserve:		
Surplus:		
Unexpended Balance, 15th May, 1948	$1,514.95	
Deduct:		
Excess of Disbursements over Receipts	808.19	
		706.76
		$5,855.69

Exhibit "B"

Statement of Revenue and Expenditure
For the year ended 15th May, 1949

RECEIPTS

General Funds:		
Annual Dues:		
Current Year—Active Members	$3,615.00	
Associate Members	16.00	
Prior Years	195.00	
		$3,826.00
Bond Interest		60.00
		$3,886.00

DISBURSEMENTS

General Funds:		
Salaries — Secretarial Services, Manitoba Medical Association	$ 937.50	
Printing, Stationery and Postage	293.91	
Catering	111.76	
Telephone	27.00	
Lantern Expense	58.00	
Audit Fees	25.00	
Donations	543.00	
General Expense	228.55	
		2,224.72
Excess of Receipts over Disbursements		$1,661.28

Library Fund

RECEIPTS

Appropriated from General Surplus	$ 500.00	
Bank Interest	17.05	
		$ 517.05

DISBURSEMENTS

Books Purchased	$1,205.24	
Library Supervision	120.00	
		1,325.24
Excess of Disbursements over Receipts		$ 808.19

Benevolent Fund

16th May, 1949.

To the President and Members,
The Winnipeg Medical Society,
Winnipeg, Manitoba.

Dear Sirs:

In accordance with your request, we have made an audit of the transactions affecting The Winnipeg Medical Society Benevolent Fund from date of inception to 15th May, 1949, and submit herewith our statement pertaining thereto:

Total Receipts to date	$2,706.00
Total Disbursements to date	705.00
Balance on deposit in The Bank of Toronto	$2,001.00

Donations received are in accordance with duplicate receipts examined by us. All disbursements have been duly authorized.

Yours very truly,
THORNTON, MILNE & CAMPBELL,
Chartered Accountants.

Report of Trustees

To The President and Members of
The Winnipeg Medical Society:

As Senior Trustee, I wish to report the following securities as being held in Safety Deposit Box, Bank of Toronto, 394 Portage Avenue:

Dominion of Canada Bond, 3%, due 1st October, 1952	$1,000.00
Dominion of Canada Bond, 3%, due 1st May, 1957	$1,000.00
Balance on Deposit, Bank of Toronto, May 14th, 1949	$2,879.39

The aforesaid Bonds and Bank Deposits have been vouched for in the Auditors' Report.

I have personally inspected the office equipment of the Society at 604 Medical Arts Building, the equipment in the Manitoba Medical College in the custody of the Caretaker, and Lantern in care of Mr. Gordon Axtell, and found them to be as listed herein:

Office Equipment at 604 Medical Arts Building:

1 Steel Filing Cabinet, 3 drawers; 1/2 Interest in Elliott Addressing Machine; 1/3 Interest in Mimeograph Machine; 1/3 Interest in Underwood Typewriter, 14-inch Carriage, Serial No. 5732553-14; 1/3 Interest in "Copyright" Holder.

Equipment in Manitoba Medical College, in custody of Caretaker:

12 Wooden Chairs; 4 Wooden Trestles and 2 Wooden Table Tops for same; 1 Cupboard; 1 Gavel, this Gavel made from wood from the ruins of the Royal College of Surgeons and presented to the Winnipeg Medical Society by Dr. John C. Hossack; 1 Plaque, Honour Roll of Past Presidents (in Physiology Lecture Room of the Medical College) book value $218.64; 1 Screen for Lantern Slides, fastened on wall of Theatre "A" of Medical College, donated by Dr. A. M. Goodwin.

In care of Mr. Gordon Axtell:

1 Delinescope Lantern, Model OJR, No. 3647, made by Spencer Wells Co. of Buffalo, New York, and one spare bulb for same.

W. F. Abbott,
Senior Trustee.

Membership Committee

To The President and Members of
The Winnipeg Medical Society:

The total 1948-1949 membership is 454, made up as follows

Active Paid-up Members	367
Life Members	17
Non-Active Members	10
New Members (Complimentary to end of season)	2
Internes (Complimentary)	4
Sick Members (not billed for fees)	2
Membership Fees Unpaid	52
	454
Total Membership, 1947-1948	464
Active Paid-up Members, 1947-1948	381

Decrease in Total Membership from 1947-1948 — 10, and decrease in Total Contributing Membership — 14.

During the year 26 members have left the city and 6 members are deceased.

Twenty-two new members have joined the Society during 1948-1949.

A total of 80 doctors residing in the City of Winnipeg are not members of the Society, as follows:

Temporary license (1 year) with C. P. & S.	11
Retired	17
Practising	52

In closing, might I say that it was of great assistance in writing prospective new members to be able to quote a fee of $5.00 for the last 4 months of the fiscal year, namely, from February 1st to May 31st, 1949.

This was agreed to by the Executive in January of this year and was instrumental in getting quite a few new members who normally would not have joined at the time had they to pay the full $10.00 fee.

May I bespeak this continued co-operation on the part of the Executive for my successor.

All of which is respectfully submitted.

Jack McKenty,
Chairman.

Legislative Committee

To The President and Members of
The Winnipeg Medical Society:

No meetings of the Legislative Committee were held during the past year. Medical Legislation dealt with at the recent sessions of the Legislature was chiefly amendments to existing Acts which did not warrant, in our opinion, assembling either the Committee or the Committee of Fifteen.

An Act amending the Basic Science Act was passed, removing the practice of Dentistry from the application of the Act.

An Act was passed incorporating the Winnipeg Clinic.

An Act was passed amending the Health Services Act, which permits the establishing of Diagnostic Units in locations where no Local Health Unit exists.

Advance notice of all proposed Legislation was received through the office of Dr. Macfarland, and discussed with him.

I feel that thanks are due to Dr. Macfarland for keeping us so constantly informed.

All of which is respectfully submitted.

Ross H. Cooper,
Chairman.

Library Committee

To The President and Members of
The Winnipeg Medical Society:

The Medical Library has continued to be of great value to Winnipeg and district physicians and they have made increasing use of it. In the year under review 1,109 books and 2,469 journals were loaned to Winnipeg physicians, an increase of 58, or 74% since 1944.

The total number of volumes in the library at the end of March, 1949, was 16,757. Additions for the year were 504, an increase of 161, or 47% over 1947-48. Journals and serials received by subscription on all funds numbered 224 titles, an increase of 2. Additional to the subscriptions many titles are received by gift or exchange through donated copies of the C.M.A. Journal and the Manitoba Medical Review. The total number received at the present time is 314 titles.

The request of the Winnipeg Medical Society that the library be kept open during some evenings of the week was acceded to by the Medical Library Committee. Through February, March and April, 1949, the library was open from 8 p.m. to 10 p.m. five nights a week with a student assistant on duty. The use made of the evening hours was disappointing.

The prime need of the library is for increased space. There is a possibility that a separate building may be erected on the Medical College property. This project is the concern of the University, but it is mentioned to show that the Library committee is alive to the situation.

For some years the Winnipeg Medical Society has made a grant of $500.00 yearly. This has been very welcome. During this period, however, the prices of books, periodicals and binding have increased sharply. In the years 1940-43 the average cost of books was $6.32 a volume, in 1948 it was $7.32½, an increase of nearly 16%. Periodicals in the same interval have increased from $8.52 to $10.38, an increase of nearly 22%. The cost of binding periodicals has risen from an average of $2.92 in 1938 to $5.51 per volume in the past year, an increase of 88%.

In view of the greater number of books, especially recent publications, and periodicals, the increased use of the Library by Winnipeg physicians and the increased cost of books, periodicals and binding, your representative on the Library Committee earnestly requests that the grant from the Winnipeg Medical Society be increased to $750.00 per annum. This is less than $2.00 yearly per member, and less than one-third the cost of a new book.

Respectfully submitted.

Ross Mitchell,
Representative to Library Committee, Faculty of Medicine, University of Manitoba.

Benevolent Fund

To The President and Members of
The Winnipeg Medical Society:

Since the inception on May 8th, 1947, the Committee of the Benevolent Fund of the Winnipeg Medical Society has met 10 times.

The officers of the committee are:

Dr. Ross Mitchell, Chairman
Dr. Walter Tisdale
Dr. P. H. McNulty, Treasurer
Dr. Anna Wilson, Secretary
Dr. Gordon P. Fahrni

The President of the Winnipeg Medical Society: Dr. Corrigan, for 1947, and Dr. Macpherson, for 1948-49

Letters have been sent to members of the Winnipeg Medical Society requesting donations. Signs were put up in all the Hospitals.

In the first year, nine people donated to the Fund. The sum of $1,125.00 was received. In the second year 109 members contributed. The total of $1,581.00 was raised. This makes a total of $2,706.00 raised.

Five hundred dollars was disbursed to relieve distress of Medical Practitioners or their dependents in 1947. One hundred and fifty-five dollars was disbursed in 1948. Bank Balance, $2,081.00, May, 1949.

Letters from the recipients of the Fund were very grateful and speak well for the gratitude of the individuals and also for the necessity of such a Fund. It is felt that it serves a real purpose in the Medical Community. We hope large donations from members will be forthcoming to perpetuate the Fund.

The By-laws have been carefully written and presented to the Income Tax Division of the Department of National Revenue to have our Society recognized as a Charitable Organization so that income tax exemption may be claimed by the donors.

Letters have been received by Dr. Mitchell from the British Medical Association and the B.C. Medical Association, explaining how established systems work in these communities.

In pursuance of the policy of the Group to further projects which are likely to conduce to the education of the Medical Practitioners and the public at large, the Committee has requested the privilege of arranging the Gordon Bell Memorial Lectures in the fall.

Respectfully submitted.

Anna E. Wilson,
Secretary.

Programme Committee

To The President and Members of
The Winnipeg Medical Society:

During the session 1948-1949 the Society held seven regular meetings as well as two special meetings. The meeting of January 21st, 1949, was arranged by the staff of the Winnipeg General Hospital and consisted of a series of exhibits and presentations which occupied the entire Out-patients Department. This is a new departure for the Winnipeg Medical Society, but most of the members who attended found it interesting and instructive, so it is possible that such meetings may take place as yearly events.

May I take this opportunity to thank the other members of my committee, Doctors L. R. Coke, F. A. L. Mathewson and Harry Medovy, for their invaluable guidance and assistance. I would also like to thank all the other members of the Society who took part in the programmes so ably and willingly.

Respectfully submitted,

Arthur E. Childe,
Chairman.

Council of Social Agencies

To The President and Members of
The Winnipeg Medical Society:

As the representative of this Society to the Council of Social Agencies, I received notice of, and attended one meeting of the Council.

At this meeting, held in the Legislative Buildings, the Hon. Ivan Schultz outlined the plans of the Provincial Government for the utilization of the money provided by the Federal Government for Public Health work in this Province.

The Minister spoke of the amount of financial aid that would be forthcoming for certain projects, such as Hospital accommodation, care of the Tuberculous patient and all Public Health measures in general. He also stated that all requests for assistance were to be placed in his hands promptly as the Federal Government had placed a limit of one year in which the Provinces were to make a survey of their needs, these surveys to be financed by the Dominion. A short discussion followed.

Respectfully submitted.

John A. Swan,
Representative.

Anaesthesiology Section

To The President and Members of
The Winnipeg Medical Society:

The Anaesthesiology Section has held nine official meetings during the past academic year, with the final one just over.

Meetings have taken the form of a dinner at the Medical Arts Club Rooms, followed by a scientific programme and discussion. Several films on Anaesthesia have been shown. The section has eighteen full members, and the newly elected officers are: Dr. L. Dorothy Barnhouse, Chairman; Dr. R. G. D. Whitehead, Secretary..

The Section comprises the Winnipeg Anaesthetists' Society and the Manitoba Division of the Canadian Anaesthetists' Society.

Respectfully submitted.

H. C. Hutchison, Secretary.

The Eye, Ear, Nose and Throat Section

To The President and Members of
The Winnipeg Medical Society:

Four meetings of the Eye, Ear, Nose and Throat Section have been held during the past year.

One meeting with Dr. Fraser of the Workmen's Compensation Board was held to discuss mutual problems.

At a second meeting Dr. K. J. Austmann presented an interesting case report of "Anaphylaxis to Lens Protein."

The other meetings were devoted to consideration of fee schedules and other business matters.

An additional meeting will be held soon to elect officers for the ensuing year.

Respectfully submitted.

R. M. Ramsay, Secretary.

Radiology Section

To The President and Members of
The Winnipeg Medical Society:

The officers of the Section for the 1948-1949 term are:

Chairman, Dr. A. E. Childe
Secretary, Dr. A. W. McCulloch
Treasurer, Dr. M. K. Kiernan

During the winter, two meetings of the Section were held. Business relating to the specialty, short papers and round table discussions composed the meetings.

All of which is respectfully submitted.

A. W. McCulloch, Secretary.

Section of Internal Medicine

To The President and Members of
The Winnipeg Medical Society:

A meeting of the Section of Internal Medicine was held on April 26th, 1949, with Dr. Charles Walton in the chair. The primary purpose of this meeting was to re-organize this group as a Section of the Manitoba Medical Association, as well as of the Winnipeg Medical Society. During the meeting a new executive was elected, as follows:

Honorary President, Dr. Chas. Hunter
Chairman, Dr. John M. McEachern
Vice-Chairman, Dr. J. W. MacLeod
Secretary, Dr. A. B. Houston

Meetings have been held previously during the year, but these were all in connection with the fee schedule revision of the Manitoba Medical Service.

The new executive was instructed by the group to take such steps as were considered necessary to organize various academic meetings, economic meetings, etc., and it was suggested that the group might make some contribution to medical teaching, possibly via the Educational Committee of the Manitoba Medical Association. Generally speaking, it was felt that some of the aims of the group might be accomplished under the following headings:

(a) Sectional contributions to the programme of the Winnipeg Medical Society.
(b) Sectional contributions to the programme of the Manitoba Medical Association.
(c) Supplying speakers for District Medical Society meetings.
(d) The organization of a journal or study group.
(e) Editorial duties in connection with the Manitoba Medical Review.

This obviously is a very incomplete list of the possible activities of this group, but may convey some idea of some of the things we hope to accomplish.

Respectfully submitted.

A. B. Houston, Secretary.

Obstetrics and Gynaecology Section

To The President and Members of
The Winnipeg Medical Society:

The Section of Obstetrics and Gynaecology held four regular meetings during the year. The average attendance was fifteen.

The subjects discussed were:

Leucorrhoea.
Saddle Block Anaesthesia in Obstetrics.
Breech Presentation.

The final meeting took the form of a Supper Meeting, at which films were shown on Vaginal Hysterectomy and Sodium Pentothal Anaesthesia in Obstetrics.

There was one special meeting, called to discuss the problem of the increase in incidence of mammary abscesses. A Committee was appointed to investigate this problem. They are still acting and will continue to do so as long as is necessary.

The following were elected as Officers for the year 1949-1950:

Chairman, Dr. W. J. McCord
Secretary, Dr. A. R. Tanner
Councillor, Dr. C. Henneberg

Respectfully submitted.

H. Guyot, Chairman.
W. J. McCord, Secretary.

Paediatric Section

To The President and Members of
The Winnipeg Medical Society:

On the evening of August 12th, 1948, a meeting was held in the Medical Arts Club Rooms for the purpose of re-organizing the Paediatric Section of your Society. This meeting came about largely through the efforts of Dr. Joseph Graf. It was attended by eleven Winnipeg Paediatricians. At this meeting Dr. Graf became President of the Section and Dr. S. Israels was elected Secretary-Treasurer.

It was decided at this meeting that the group would get together four times each year, twice in the fall and twice during the winter.

A Programme Committee under the chairmanship of Dr. H. Medovy was named. Dr. Harold Popham was elected liaison officer between the Paediatric Section and the Manitoba Medical Service. He was given power to add members to his committee.

It was the wish of the group that the Paediatric Section make efforts to bring visiting speakers in Paediatrics to Winnipeg.

In October, Professor McQuarrie of the University of Minnesota was a guest of the Paediatric Section at a dinner in the Medical Arts Club. He later addressed the Winnipeg Medical Society and spoke at a luncheon at the Children's Hospital.

Dr. C. H. A. Walton was the speaker to the group in December, 1948.

The Section lost one of its promenent members during the year in the death of Dr. G. Chown. Dr. Chown was the leader of Paediatric thought in Winnipeg for many years and the section has as its members many of his former students.

This group is young but Paediatricians know how to deal with the young and we will see that our section thrives.

Respectfully submitted.

S. Israels, Secretary-Treasurer.

SOCIAL NEWS

Reported by K. Borthwick-Leslie, M.D.

It is interesting to note that in the list of doctors graduating in May of 1949 with the degree of Doctor of Medicine there were two sets of twins, each the son of a medical man—Doctors John Maxwell and William David Bowman, sons of Dr. Maxwell Bowman, and Robert Henry and Thorburn Kenneth Thorlakson, sons of Dr. P. H. T. Thorlakson.

♦

How proud Dr. and Mrs. G. M. La Fleche must be of their charming and famous daughter, Gisele, top star in the "Hats Off to Winnipeg Revue." The story of her career from two years to twenty-two years reads as interestingly as a best seller, but is all true to fact.

♦

Congratulations to Dr. L. G. Israels, '21 Grad., on his award, by the National Research Council, of a fellowship to continue research in Biochemistry at the "U" of "M."

♦

Dr. and Mrs. Geo. Fletcher, Victoria, B.C., are renewing friendships in town, visiting Mr. and Mrs. G. Lyman Van Vliet.

♦

Dr. and Mrs. A. L. Harvey, with daughter Pamela, are flying to Honolulu, where Dr. Harvey will take a years P.G. course at Capiolani Hospital.

♦

Mr. Wm. Ralph Wilson, Edmonton, announces the engagement of his only daughter, Dr. Anna E. Wilson, to Group Captain Norman E. Sharpe, M.C., of Ottawa. The wedding will take place July 7th in Ottawa.

Numerous farewell functions in honor of Dr. Anna Wilson have been arranged, among them breakfast, Sunday, June 26th, at the Greystone Arms, when the Winnipeg Medical Women will bid her all the best with a momento of Manitoba.

♦

Dr. and Mrs. F. Petersen and daughters have left for Los Angeles, California, where they will make their home.

♦

Our Medicos have been in the limelight lately in appointments to responsible offices:

Dr. L. G. Bell, Dean of the Manitoba Medical College and Professor of Medicine.

Dr. Ed. Holland is now Col. Holland, Asst. Director of Medical Services in the Prairie Command section of the Reserve Force Medical Advisory Staff.

Dr. A. R. Birt is Vice-Pres. of the Canadian Dermatological Association.

Dr. Norman Elvin was named to the council of the Canadian Opthamological Society.

Dr. John McEachern is Vice-Pres. of the Canadian Heart Association.

Dr. Jessie McGeachy is Vice-Pres. for Manitoba of the Can. Federation of Medical Women.

Dr. B. J. Ginsburg is Pres. of the Luxton Home and School Association.

Dr. A. C. Abbott is Pres. of the Winnipeg Winter Club.

Dr. Roy Martin is in charge of the Athletics Division of the U. of M. Alumnae.

♦

Dr. Ellen Douglass is holidaying for a month at Banff.

The marriage of Hazel, daughter of Mr. and Mrs. G. Godkin, and Dr. James C. Menzies, son of Dr. and Mrs. A. Menzies, of Morden, Man., was solemnized in the United Church, Morden, on June 4th. Dr and Mrs. Menzies will reside in Winnipeg.

♦

Dr. and Mrs. Irving Miller and family returned recently from Boston, Mass., where Dr. Miller completed his post-graduate work. He is now located in Winnipeg.

♦

The picture of Dr. and Mrs. Samuel Zeavin, beaming at their sons, Dr. Irvin of Lincoln, Nebraska, and Dr. Bernard, interne at the General Hospital, is interesting and but good. Dr. Irvin spent the Anniversary Week visiting his parents.

♦

Among those who holidayed in the West, after attending the Convention in Saskatoon are: Drs. J. McGeachy-McLeod and Dr. McLeod, who motored to Banff, Dr. and Mrs. J. McKenty and Dr. and Mrs. R. G. Greer, who are guests at Jasper Park Lodge.

♦

Dr. and Mrs. Hilton S. Good, Regina, Sask., announce the engagement of their daughter, Mary Elizabeth Jane, to Mr. Gerald Edward Kaumeyer, Melfort, Sask. The marriage took place June 28th, in St. Mary's Anglican Church, Regina.

♦

The marriage of Allison Grant, daughter of Dr. and Mrs. W. M. Grant, Toronto, and Dr. Bruce Chown, son of the late Dr. and Mrs. H. H. Chown, took place May 27th, in Fifth Ave. Presbyterian Church. Dr. J. S. Bonnell, formerly of Westminster Church, Winnipeg, officiated. After visiting in Connecticut and Milton, Mass., Dr. and Mrs. Chown sailed from Montreal, June 17th, for Britain. They will return to Winnipeg in September.

♦

Sure and I need a whole page for the new arivals this month. The obstetricians and stork have been working overtime!

First, I was chastised for not being observant enough to notice my neighbor's clothesline, so apparently missed the arrival of Dr. and Mrs. Allan Davidson's new son, Allan James, on May 15th, a brother for Barbara Joan. So sorry.

Dr. and Mrs. Avard Fryer announce the birth of Ava Margaret, June 12th, at the McKellar Hospital, Fort William.

Dr. and Mrs. Robert Ramsay announce the birth of their third son, James Beatty, May 23rd. Another baseball team in the making!

Dr. and Mrs. Wm. J. Boyd announce John Denton, June 7th. A brother for Tommy and Janie Ann.

Dr. and Mrs. L. R. Coke, take the prize this month, in announcing the arrival of Robert Alexander and Wm. James, June 15th.

Dr. and Mrs. R. A. Jacques, St. Boniface, announce the birth of their second daughter, June 21st.

Dr. and Mrs. W. J. McCord also announce the birth of their daughter, June 3rd.

Dr. and Mrs. J. R. Ireland announce the arrival of a daughter, June 19th.

Dr. and Mrs. J. M. Lederman (nee Dr. Harriet Perry), announce the arrival of Robert Guthrie, June 1st.

Department of Health and Public Welfare

Comparisons Communicable Diseases — Manitoba (Whites and Indians)

DISEASES	1949		1948		Total	
	Apr. 24 to May 21,'49	Mar. 27 to Apr. 23,'49	Apr. 18 to May 15,'48	Mar. 21 to Apr. 17,'48	Jan. 22 to May 21,'49	Dec. 28,'47 to May 15,'48
Anterior Poliomyelitis	5	3	0	0	8	3
Chickenpox	114	86	247	204	644	1208
Diphtheria	1	2	1	2	12	8
Diphtheria Carriers	0	0	0	0	2	0
Dysentery—Amoebic	0	0	0	0	0	0
Dysentery—Bacillary	0	0	0	0	4	0
Erysipelas	2	3	4	1	14	12
Encephalitis	0	0	0	0	0	0
Influenza	42	31	36	34	115	110
Measles	704	636	61	20	3229	173
Measles—German	43	2	7	1	52	30
Meningococcal Meningitis	3	3	1	0	11	6
Mumps	96	115	220	200	731	953
Ophthalmia Neonatorum	0	0	0	0	0	0
Pneumonia—Lobar	22	36	20	13	102	87
Puerperal Fever	0	0	0	0	1	1
Scarlet Fever	7	3	24	31	46	98
Septic Sore Throat	3	4	1	2	16	10
Smallpox	0	0	0	0	0	0
Tetanus	1	0	0	1	1	1
Trachoma	0	0	0	0	0	0
Tuberculosis	93	60	116	113	270	536
Typhoid Fever	0	0	0	0	3	2
Typhoid Paratyphoid	0	0	0	0	0	0
Typhoid Carriers	0	0	0	0	1	0
Undulant Fever	0	1	3	1	6	9
Whooping Cough	5	23	14	25	84	187
Gonorrhoea	128	105	113	113	532	543
Syphilis	29	24	32	47	167	205
Diarrhoea and Enteritis, under 1 yr.	23	16	17	27	68	92

Four-Week Period April 24th to May 21st, 1949

DISEASES (White Cases Only) *Approximate population.	*743,000 Manitoba	906,000 Saskatchewan	3,825,000 Ontario	2,962,000 Minnesota
Anterior Poliomyelitis	5	—	—	3
Chickenpox	114	223	1983	—
Diarrhoea and Enteritis	23	1	—	—
Diphtheria	1	—	4	5
Dysentery—Amoebic	—	—	—	6
Dysentery—Bacillory	—	2	—	9
Influenza	42	152	31	4
Malaria	—	—	—	1
Encephalitis	—	—	2	2
Measles	704	665	1041	678
Measles, German	43	353	214	—
Meningococcal Meningitis	3	1	1	8
Mumps	96	40	1321	—
Pneumonia Lobar	22	—	—	—
Erysipelas	2	1	2	—
Septic Sore Throat	3	4	6	—
Scarlet Fever	7	3	245	116
Tetanus	1	—	—	—
Tuberculosis	93	41	187	285
Typhoid Fever	—	—	4	2
Undulant Fever	—	—	6	25
Whooping Cough	5	37	87	4
Gonorrhoea	128	—	264	—
Syphilis	29	—	152	—

DEATHS FROM REPORTABLE DISEASES

For Four-Week Period April 20th to May 17th, 1949

Urban—Cancer, 56; Influenza, 1; Pneumonia Lobar (108, 107, 109), 7; Pneumonia (other forms), 8; Syphilis, 2; Tuberculosis, 10; Diarrhoea and Enteritis, 2; Other Diseases of skin, 1. Other deaths under 1 year, 19. Other deaths over 1 year, 212. Stillbirths, 19. Total, 250.

Rural—Cancer, 30; Influenza, 8; Pneumonia Lobar (108, 107, 109), 3; Pneumonia (other forms), 9; Syphilis, 1; Tuberculosis, 14; Typhoid Fever, 1; Chickenpox, 1; Hodgkin's Disease, 1; Diarrhoea and Enteritis, 3. Other deaths under 1 year, 16. Other deaths over 1 year, 187. Stillbirths, 14. Total, 217.

Indians—Influenza, 1; Pneumonia Lobar (108, 107, 109), 1; Pneumonia (other forms), 2; Tuberculosis, 3; Mumps, 1. Other deaths under 1 year, 4. Other deaths over 1 year, 4. Total, 8.

♦

Poliomyelitis—With eight cases reported does not give any indication as to whether this will be an epidemic year or not. Five of the eight cases are from the Steinbach and La Broquerie area.

Measles is still epidemic in some areas while having "burned itself out" in other parts.

Scarlet Fever continues to show a very low incidence.

Syphilis and Gonorrhoea show a slight increase for this period but a decrease for the year to date.

Insofar as communicable diseases are concerned the health of the population is quite above average.